

GROWTH AND TRANSFORMATION OF SMALL MANUFACTURING FIRMS IN AFRICA

INSIGHTS FROM
GHANA, KENYA AND
ZIMBABWE

EDITED BY ANDREW MULLEI

GHANA,
KENYA AND

ZIMBABWE

Growth and Transformation of Small Manufacturing Firms in Africa

Insights from Ghana, Kenya, and Zimbabwe

Edited by Andrew Mullei

A Publication of

**AFRICAN CENTRE FOR
ECONOMIC GROWTH**

Funded by

**UNITED STATES AGENCY FOR
INTERNATIONAL DEVELOPMENT**

Table of Contents

List of Tables	ii
Acknowledgements	iii
Foreword	iv
CHAPTER ONE	
Introduction	1
CHAPTER TWO	
Small Manufacturing Firms in Africa	6
CHAPTER THREE	
Study Methods	12
CHAPTER FOUR	
How Can Small Firm Dynamics Be Viewed	15
CHAPTER FIVE	
Size Categorisation and Distribution of Small Firms	26
CHAPTER SIX	
Graduation of Firms	35
CHAPTER SEVEN	
Growth and Growth Spurts of Small Firms	39
CHAPTER EIGHT	
Transformation of Firms	49
CHAPTER NINE	
Summary	54

Acknowledgements

Many people contributed to the logistics, data collection, analysis, discussions and dissemination that preceded the production of this publication. There were three research teams for Ghana, Kenya and Zimbabwe. In Ghana, a team that was led by Amoah Baah-Nuakoh included Festus Turkson, Kwame Baah-Nuakoh and William Baah-Boateng. The Zimbabwean team was led by Theresa Moyo. Other members of her team included Takawira Mumvuma, Sibongile Sibanda, G Mandewu, T Mabeza, I Chingombe, P Bongo, S Chumi, S Shamu, P Mandaza and B Mhlanga. Peter Kimuyu led the Kenyan team that included Mary Kinyanjui, Peter Kamau, Calvin Kayi, Jacob Nganga, Isabel Munandi, Timothy Mbugua and Daniel Ndolo. A long list of people attended the peer review workshop in Nairobi and the dissemination workshops in Accra, Nairobi and Harare. More than 600 entrepreneurs pooled from Ghana, Kenya and Zimbabwe allowed the research teams to intrude into their business affairs. All of you played an important role in making this report possible. ACEG acknowledges these contributions without of course any attribution whatsoever. ACEG also recognises the support of the United States Agency for International Development (USAID), who provided funding for undertaking the research leading to publication of this book.

Andrew Mullei
Executive Director
African Centre for Economic Growth
Nairobi, Kenya

Foreword

Interest in Africa's small enterprises begun to shift towards centre stage in the 1970s following the International Labour Organisation's reports that vaunted their employment and wealth creation potential. Since then, a lot of research has been conducted to generate information on the salient features of small enterprises. One outcome of that research effort is a proliferation of literature on the structure of these enterprises. Sharpening policies on small enterprises continues to be important in Africa where development remains elusive and the search for efficacious policies invaluable.

The African Centre for Economic Growth must be commended for sponsoring research that sought to explore the growth and transformation experiences of small manufacturing firms in Ghana, Kenya and Zimbabwe. From this piece of work, we learn that, as a matter of fact, small enterprises in Africa are not a dead end: they grow, graduate and transform. Of course, there are numerous factors identified in this piece of work as shaping small firm dynamics, forming a solid basis for extracting more focussed small enterprise policy interventions.

This publication confirms that efforts expended in supporting small enterprises in Africa should be sustained. The publication not only adds to the rapidly burgeoning literature on Africa's small enterprise sector, but pushes the discourse on the continent's development to a new threshold. I am confident that development practitioners and theoreticians will find this publication useful.

Peter Kimuyu

Overall Project Coordinator &
Team Leader, Kenya Case Study

CHAPTER ONE

Introduction

This is a synthesis of reports from a multi-country study on the growth and transformation of micro- and small-scale manufacturing firms in Africa (Baah-Nuakoh et al 2002, IPAR 2002, and Moyo et al 2002). Growth and transformation are part of many and varied firm dynamics that can include firm formation, growth, upgrading, diversification, entry into new markets, exit, mergers and acquisitions. The transformation of firms is often accompanied by many of these dynamics.

The study was on small manufacturing firms that form a subset of small firms common in Africa and other developing countries. These firms suffer high mortality rates, remain informal and rarely graduate into high value-adding activities. Many rarely grow beyond the micro-level of 1-10 workers and hardly transform but remain stunted. Since the majority of the private enterprises in Africa lie in the micro category (GEMINI 1994), a rapid growth and transformation strategy for Africa would have to get these firms to grow and transform into thresholds where they are able to adopt efficient production technologies that would enable them compete effectively in an increasingly liberalized environment. How Africa can get its micro- and small-scale firms attain high levels of growth and transformation is the main motivation for this study.

Early research treated firms in the small enterprise sector as survival mechanisms with limited developmental value (Ongile and McCormick, 1996). This view was irrevocably shattered by the 1972 International Labour Organization report that confirmed the significant employment and wealth creation potential of the burgeoning, often informal, small enterprise sector (ILO, 1972). Since then, benign neglect has been replaced by frantic attempts to tap the sector's potential in improving economic prospects (King, 1996). Many countries in Africa now have programmes for encouraging small businesses and tap their development potential.

Small enterprises can provide a welfare safety net to alleviate the burden of poverty and serve as dynamic agents for economic development. They can be cornerstones of employment and wealth creation, and provide training and acquisition of skills for the masses of people outside the formal educational

and vocational systems cost-effectively. Small enterprises redistribute welfare by attracting a large percentage of poor people seeking strategies for meeting basic needs. The small enterprise sector also forms both a basis for a self-reliant indigenous industrial development and the bedrock for the development of local entrepreneurship.

These enterprises link closely with agriculture so that their promotion is often part of an agriculture-led development strategy. Compared to large enterprises, small enterprises are more labour-intensive. Labour-intensive production tends to be more efficient where labour is plentiful and capital scarce such as in Africa. Small enterprises also promote equitable distribution of income because not only are they labour-intensive but also owners of small businesses are generally poorer than those of large businesses. Small firms serve as the breeding ground or seedbed for large firms. They constitute the "entry point" (and "training ground") for entrepreneurs and a "testing ground" for the development of low-cost products. However, these outcomes obtain where a strong graduation pattern of firms from one size category to another exists.

Africa's development debates lead to the conclusion that an important pathway for improving socio-economic prospects is to put the continent on a rapid growth path. Getting the continent into a rapid transformation process will be crucial in ensuring that large numbers of unemployed Africans are absorbed into productive employment to reduce large-scale poverty and improve the welfare of the majority of Africans. Although this will require a judicious mix of diverse strategies (such as political, economic, and social), the economic side of the grand strategy must include an attempt to transform micro and small firms to permit exploitation of scale economies, and to shift businesses to thresholds where the probability for value addition is higher and technological innovations or adaptations are more probable.

For these positive developments to take place, a basic structural problem facing micro and small-scale enterprises in Africa must be solved first. This is because such enterprises suffer high mortality rates, operate informally and suffer the penalties of informality, and rarely grow or graduate to high value-adding activities. Firms that started small tend to remain small¹ and very little transformation occurs among Africa's micro and small scale firms. Since most of Africa's private sector lies in the small category (GEMINI 1994), a rapid growth and transformation strategy for the continent must get these firms to grow and transform so that they are able to adopt efficient production technologies and compete in an increasingly liberalised and competitive environment. This will allow small firms in Africa to use available resources

¹ See McCormick (1996) and CBS, ICEG & K-Rep (1999).

more efficiently and increase output and returns to both workers and proprietors.

The key policy issue surrounding the promotion of small enterprises in Africa is how to promote their growth and overall transformation. Evidence from many studies indicates that while there could be an abundance of people with entrepreneurial acumen, one puzzling phenomenon still persists: the ubiquitous nature in many African countries of lack of substantial graduation and transformation by started-up firms to become successful large firms that are better able to generate employment (ACEG 2001).

Enterprise expansion probably occurs gradually but can also occur rapidly within a limited period during the lifecycle of a firm. Periods of very fast growth can be critical junctures in the evolution of firms, presenting an excellent opportunity for catalytic interventions to push firms into the next size category. Yet very little is known about growth and growth spurts in Africa's small firms. An important research question is whether these phenomena ever exist in the small enterprise sector and in what firm size categories and time period they are most prevalent. How can these dynamics be activated and enhanced once they set on? What triggers these transformations and what are their key manifestations? How is it that some firms upgrade their technical capability while others do not? What precipitates progressive changes in management styles? What makes a shift from trade to manufacturing most likely? What about the shift from non-formal to formal ways of business operations? Does this always result in relocation? What ownership and managerial characteristics contribute to these transformations? Why is it that only a few small firms in Africa manage to grow and transform themselves much faster while their counterparts either stagnate or decline and finally die? Given the latter predicament, how can African countries accelerate the graduation pace and transformation process of their small firms into larger ones in order to attain their core developmental goals?

These questions epitomize the policy concerns that drove the study out of which this report is drawn.

The multi-country study that was the precursor to this document sought to identify key factors underlying the dynamics of small firms and to determine ways through which the contribution of small firms to Africa's rapid growth agenda can be enhanced. In the circumstance, the study begun by establishing from literature the most appropriate and pragmatic firm-size categorization (employment, investment, and output) from the perspective of growth and transformation. This was followed by a categorization of small firms by size and a determination of the size distribution. The key features of each size category were identified. Detailed analysis of the pattern and process of graduation, growth and transformation of small firms was then carried out, highlighting the determinants of the dynamics and the internal and external factors behind each.

Further, the study explored the existence of growth spurts in Africa's small manufacturing sector to determine ways through which spurts can be activated or enhanced once they set in.

Why is it significant to explore the dynamics of small enterprise?

Understanding the key factors constraining the growth and transformation of small firms into large firms in the African context is important in designing policy or directing small firm assistance programmes. This can be done, for example, through policy interventions that reduce the severity of the constraints that hold back small manufacturing firms from exploiting their full potential. A deeper understanding of the factors that influence the dynamics of small firms in Africa will be important in shaping the future development of the continent.

This document is organized as follows: section two reviews the salient features of small manufacturers in Africa, section three summarizes the strategy used in assembling and analysing the evidence for growth and transformation of these manufacturing enterprises, while section four reviews the conceptual lenses needed in scrutinizing firm dynamics in general. The empirical part of the report begins with an exploration of the size distribution of firms in section five, followed by a short analysis of graduation in section six. Growth and growth spurts are the subject matter of section seven, while an analysis of the more complex transformation process is presented in section eight before concluding in section nine.

References

ACEG. (2001). 'A Multi-Country Study of Growth and Transformation of Micro and Small Scale Enterprises in Africa: a Proposal for Research'. Nairobi, African Centre for Economic Growth.

Baah-Nuakoh, A, F. E. Turkson, K. A. Baah-Nuakoh, and W. Baah-Boateng, (2002). 'Multi-country Study on the Growth and Transformation of Micro and Small Scale Manufacturing Firms in Africa: The Ghana Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

CBS, KREP and ICEG. (1999). National Micro and Small Scale Enterprises Baseline Survey. Nairobi.

GEMINI. (1994). 'Micro and Small Enterprises in Kenya: Results of the 1993 National Baseline Survey'. Bethesda, Growth and Equity through Microenterprise Investments and Institutions Technical Report No. 75.

IPAR, (2002). 'Multi-country Study on the Growth and Transformation of Micro and Small Scale Manufacturing Firms in Africa: The Kenya Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

ILO. (1972). Kenya: Employment, Income and Inequality. Geneva, International Labour Organisation.

King, K. (1996). Jua Kali Kenya: Change and Development in an Informal Economy, 1970-75. Nairobi, East African Educational Publishers.

McCormick, D. (1996). 'Small Enterprise Development: Problems, Policy and Practice' in Ngondi, C. (ed.) Sectoral Policies Focusing on Kenya's Future Reforms. 1, pp.68-83. Nairobi.

Moyo, T, T. Mumvuma and S. Sibanda, (2002). 'Multi-country Study on the Growth and Transformation of Micro and Small Scale Manufacturing Firms in Africa: The Zimbabwe Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

Ongile, G. and D. McCormick, (1996). 'Barriers to enterprise growth: Evidence from Nairobi's Garment Industry' in McCormick, D. and P. Pederson (eds) Small Enterprises: Flexibility and Networking in an African Context Nairobi, Longhorn.

CHAPTER TWO

Small Manufacturing Firms in Africa

The small enterprise sector in Africa is exploding because there are very few formal avenues for pursuing interest-bearing investment due to shallow stock market and interest rates that neither keep up with inflation nor signal relative scarcity of capital. When investors cannot entrust their savings to financial institutions, they tend to opt for entrepreneurship (Hart, 1973). Many African investors are either illiterate or semi-illiterate; consequently, the management of large and complex organizations is difficult so that operations of such investors tend to be limited to small enterprises. A further motivation for operating small firms is the avoidance of registration-related costs and red tape, as well as taxation.

Most of the small enterprise proprietors are local people but the significance of the local component of small enterprise varies across countries depending on their political histories. In Zimbabwe, for example, black Africans who constitute 99% of small business persons, the rest being accounted for by immigrants of European and Asian origins. A similar but less dramatic dominance of locals can be found in Ghana and Kenya. Generally, the debut of locals into manufacturing is relatively recent.

The bulk of establishments in Africa's small enterprise sector comprises micro firms, each employing less than 10 workers². Many of the firms produce furniture and wood products, food, garment and textiles or fabricated textiles. However, the relative importance of each of these activities varies from country to country. On the whole, the largest employment is found in the furniture sector followed by food, and, garment and textiles.

The expansion of the small enterprise sector mostly takes place by establishing more micro firms rather than expanding employment. Thus one can expect to find more firms being established but not significantly more employment being created. Employment generation has taken the forms of establishment of newer firms rather than expansion of existing ones.

² In Ghana, for example, micro enterprises account for three quarters of the micro and small enterprise sector (Baah-Nuakoh, et al, 2002).

A large proportion of the entrepreneurs of the small firms is young and well educated but deficient in technical and vocational training. Entrepreneurs with technical or secondary education perform better in terms of output growth. Constraints facing the enterprises are many but the main ones include credit, demand and technology, with inadequate credit being widely cited as a major constraint (Baah-Nuakoh et al, 2002).

The sector is a mixture of self-employment outlets and dynamic enterprises involved in an array of activities that are concentrated in urban areas but that are also evident in rural areas in Africa. The activities absorb many people who otherwise would be unemployed and generate a significant proportion of the GDP in the continent. It is estimated that in Kenya in 1999, for example, there were about 1.3 million establishments employing 2.3 million individuals and generating as much as 14% of the country's GDP (Mullei & Bokea, 1999). In Zimbabwe, there were 845,434 small firms in 1990 providing employment to approximately 1.6 million people³. Most small enterprises in Zimbabwe were involved in manufacturing while the rest engage in trading, services, construction, and transportation (GEMINI, 1991).

Sole proprietorships form the majority of enterprises of which an important proportion are female-owned and operate from homes. Indeed, as many as a half of the very small businesses are female-owned. Many are also one-person operations, and although the proportion of female ownership varies across activities, it is especially small within manufacturing. Thus, although women own a significant proportion of all small enterprises taken together, men dominate small manufacturing activities. Female-owned small enterprises are more likely to operate informally than male-owned small enterprises. They also start smaller, use less start-up capital, grow slower if at all, have more limited access to credit and more often operate from less permanent premises (Kimuyu & Omiti, 2000).

Employment in the small enterprise sector makes it possible for unskilled rural migrants to acquire skills needed for survival in the more challenging urban environment. The sector also attracts skilled persons who have been retrenched from formal sector jobs, and is often viewed as a second-best option for people unable to find or keep jobs in the modern sector. The actual size of the small enterprise sector's labour force varies widely across countries, business establishments and activities. The two key components of the labour force

³ Indeed with the further accelerated closure of more firms in the private sector during the past five years, we expect the number of firms in this sector to have tremendously increased and therefore those finding their salvation from the ever escalating poverty by fruitfully engaging themselves in the activities of the small firm sector in Zimbabwe to have more than doubled or tripled by now.

however are entrepreneurs and apprentices. Informal garages absorb appreciably more apprentices and workers than the formal service sector. In the recent past, employment growth in the small enterprise sector far outpaces growth in the large modern sector (Aboagye, 1986). Many small enterprises however require skills that school leavers often lack so that the small enterprise sector on its own is unlikely to solve Africa's daunting unemployment problem (Ongile and McCormick, 1996).

Small enterprises are younger than the large ones with mean ages that differ depending on locations and activities. The age distribution of these firms is generally skewed towards the left so that many of them are younger than the mean age. In Kenya, for example, three quarters of small firms are less than 30 years old and fifteen percent are less than five years old (IPAR, 2002). For the informal small businesses, the first two years are critical for survival since mortality rates are highest around this age. In many sectors, lack of entry barriers creates severe competition that leads to the demise of less efficient and poorly managed enterprises. There are higher capital and skill requirements in some sectors such as construction and vehicle garages, however. The requirements act as effective entry barriers that reduce the intensity of competition in these sub-sectors.

Although there are cross-country variations in the method of start-up of small manufacturing activities, many were founded by the current proprietors. Some however were inherited and very few purchased from previous proprietors. In Kenya, for example, about 8% of the small manufacturers were purchased from other proprietors. The corresponding percentages from Ghana and Zimbabwe are much lower. In Zimbabwe, more than 90% of the small manufacturing proprietors are founders. Where start-up was through inheritance, the bequests were from parents of current proprietors and only very few from grandparents and siblings. Inheritance however is uncommon among the indigenous proprietors, many of whom belong to first-generation business persons in Africa. In Kenya, inheritance is more prevalent among the Asian community whose businesses are generally dynastic. In any case, founding is the main avenue through which most small manufacturing firms in Africa come into existence. A small but important proportion of firms are passed on to progeny to become inter-generational.

The majority of small manufacturing firms are family concerns while most of the rest are under private ownership. Many operate under sole proprietorship legal status while others are limited liability companies. Partnerships are also evident but rather few. There are hardly any joint ventures in this small segment of manufacturing in Africa. A significant proportion of proprietors of small manufacturing activities in Africa also operates at least one other business in

the service sector or in manufacturing or general trade. Some of the small manufacturers therefore do not specialise.

Although some firms operate from own-premises, renting premises is more common. There is also evidence of relocation from temporary to more secure premises in the course of time. The actual incidence however varies from country to country.

Most small manufacturers in Africa have at least "O"-Level educational qualifications. There is also a significant proportion of manufacturers with post-secondary – including university – education. The general level of education is higher for manufacturers than for proprietors in general commerce⁴. In addition to general education, some small manufactures have technical education. Some were apprentices in similar firms while others gained experience as owners of previous businesses. Many of the small manufacturing entrepreneurs were employees in similar types of business. The length of experience gained through these avenues varies across countries and activities. A significant proportion of the proprietors of small manufacturing firms in Africa however starts up businesses without any prior experience. Among these are many school leavers forced to start own businesses by lack of formal sector jobs. Proprietors without experience attempt to make up for the shortfall through training. Such training seems less common among female entrepreneurs whose household responsibilities complicate participation in training.

Some parents and even grandparents of current small manufacturers were also in business. Siblings and some relatives of some of the manufacturers are also in business. Proprietors with such heritage are few and their relative importance varies from country to country depending, as it does, on the political history of each country. We can conclude that whereas most small manufacturers in Africa have no business heritage and are the first generation of business persons in their families, a few have deep business heritage with businesses that run through families and generations. This is especially the case with the Asian community found in Kenya.

Owner management is the norm in Africa's small manufacturing sector. There are very few small manufactures with paid managers. Proprietors generally double up as general and production managers. Many of the entrepreneurs' small manufacturing activities are driven into business by a desire to meet family needs, secure the financial future of their families, or simply by lack of alternative occupations. Very few of these enterprises are established for the purpose of

⁴ Recent research in Kenya showed that some of the small enterprises engaged in general commerce are owned by persons who are illiterate (Kimuyu and Omiti, 2000).

creating a business empire. For this reason, many are survivalist in nature. There is also evidence of spawning of businesses by others. Such spawning is helpful in spreading risks but it dissipates limited managerial capability that in turn undermines the performance of businesses in Africa.

Most start-ups of small manufacturing activities are funded through own and family savings as well as through loans from friends. Similarly, equipment additions and upgrading are financed through own and family savings. Evidently, there is very limited use of bank loans either in financing start-up or in adding and upgrading equipment to increase productive capacity, improve product quality and enhance productive efficiency. Furthermore, many of the small manufacturers operate single shifts. In some cases, firms that previously operated more than one shift were forced to reduce their operations due to changes in product markets and re-organisation of operations.

A significant proportion of small manufacturers in Africa is unregistered and therefore operates informally. The majority of those that start informally remain unregistered and do not perceive such registration as beneficial. They therefore prefer to operate informally. Some register well after start-up, however. Late registration is motivated by a felt need to put the manufacturing operations on a legal footing. Some of the enterprises that keep books of accounts do so primarily for tax purposes.

Competition in the small manufacturing sector is fierce. Many of the enterprises have numerous competitors for their main products and entrepreneurs consider the business environment as becoming progressively more competitive. Still, some firms are able to increase their product range to meet demand from key customers. A small proportion of firms is able to export part of its output to neighbouring countries as well as outside the continent. The propensity for such exporting is sensitive to country and sectoral differences and is particularly evident among textile firms.

Small manufacturing firms continue to be concerned about the poor state of roads and unreliability of electricity and water supply in Africa. Although opinions about government policies are mixed, many of the small manufacturers view government policies as having become less supportive of their business pursuits.

Many small manufacturing firms operate from rented premises due to failure of municipal authorities to allocate enough land for small industrial and commercial operations. Purchase of land from the open market is expensive for these small enterprises that are generally undercapitalised. Renting is however problematic in most of Africa due to problems in enforcing contracts. Evictions from such premises are common and arbitrary (Moyo et al, 2002).

References

Aboagye, A.A. (1986), 'Informal Sector Employment in Kenya: A Survey of Informal Sector Activities in Kenya'. Addis Ababa, The International Labour Organization's Jobs and Skills Programme for Africa.

Baah-Nuakoh, A, F. E. Turkson, K. A. Baah-Nuakoh, and W. Baah-Boateng, (2002). 'A Multicountry Study of the Growth and Transformation of Enterprises in Africa: The Ghana Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

Hart P.E., (1973), 'Informal Income Opportunities in Ghana' Journal of African Studies. Pp. 61-89

Kimuyu, P. and J. Omiti. (2000), 'Institutional Impediments to Access to Credit by Micro and Small Scale Enterprises in Kenya'. Discussion Paper Number DP/026/2000. Nairobi, Institute of Policy Analysis and Research, Nairobi.

Moyo, T., T. Mumvuma and S. Sibanda, (2002) 'A Multicountry Study of the Growth and Transformation of Enterprises in Africa: The Zimbabwe Case'. Harare. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

Mullei, A. and C. Bokea. (1999). Micro and Small Enterprises in Kenya: Agenda for Improving the Policy Framework. Nairobi, International Center for Economic Growth.

Ongile, G. and D. McCormick, (1996). 'Barriers to enterprise growth: Evidence from Nairobi's Garment Industry' in McCormick, D. and P. Pederson (eds) Small Enterprises: Flexibility and Networking in an African Context Nairobi, Longhorn.

CHAPTER THREE

Study Methods

This document draws information from reports on Ghana, Kenya and Zimbabwe. These countries were selected because small and micro scale sectors in the countries had been previously surveyed. Part of the original plan included use of previous surveys to explore small firm dynamics. An initial proposal and identification of study teams led to a methodology workshop that revealed the need for fresh surveys with a focus on small manufacturing activities. The manufacturing sector was selected in order to partly control for heterogeneity across activities but also increase the likelihood of picking meaningful dynamics.

A common research instrument was used in the three countries. For better representation, stratified sampling design was used. This included a mixture of sector and location considerations. For the sector stratum, the survey covered food processing, wood-working, textile and garments, and metal-working firms. These four sectors account for the lion's share of the manufacturing activities in Africa⁵.

There were country level peculiarities in the choice of the sampling frame. In Kenya, the sampling frame was the September 2000 Central Bureau of Statistics checklist of industrial firms. This checklist is continuously updated to reflect additions and deletions and although it had numerous problems (inclusion of firms that registered but never started operation, or firms that operated for some time but ceased to operate thereafter), it was the best frame for different sizes of industrial firms in Kenya. In Zimbabwe, the sample frame was developed from a mini-census of small firms in the food, garments and textiles, wood and furniture, and metal and metal products sub-sectors. The baseline data was drawn from the World Bank's Regional Programme for Enterprise Development studies in Zimbabwe. The enumeration process targeted clusters with a high concentration of manufacturing activity in the sub-sectors. In Ghana, the sampling frame was constructed through a census that included a comprehensive listing of business enterprises in the food processing, textiles

⁵ In Kenya for example, these sector account for 75% of all industrial employment (Bigsten and Kimuyu, 2002).

and garments, wood and furniture and metal sub-sectors of manufacturing located in specific clusters in five major cities that were divided into zones⁶. Although the target sample was 200 micro and small scale enterprises, the outcomes of the sampling procedures in the participating countries generated slightly more than this minimum⁷.

Structured questionnaires were administered in the first place to gather three types of data sets: history of the firm, history of the entrepreneur, employment trends, sales, management systems, assets, investment, pricing and firm level technology capabilities, and perceptions about government policies and quality of public services. To collect information on these issues, the survey instrument included seven modules: enterprise and entrepreneur backgrounds, enterprise locations, business patterns and spawning, equipment and technology, formality, future plans and management capability, sales history and market orientation, business support and perceptions on broader business environment.

To throw initial light on the phenomenon of firm growth and transformation, extensive use was made of descriptive analysis, dominated by frequency tables. Where appropriate, frequency tables were complemented by modest econometric analysis of the probit, logit and ordinary least squares nature. For this second level of analysis, a selection of explanatory variables was restricted to those that relate to initial conditions to obviate statistical pathologies such as those related to endogeneity.

Case studies permitted deeper follow-up on issues pertaining to small firm growth and transformation in Africa. Such case studies obviated the need for longitudinal information. It was in recognition of the fact that the growth and transformation of small firms is an outcome of a complicity of factors that interact in ways that may be lost on the analysis of broad survey data. The case studies permitted collection of additional information that would not have been possible using the survey instrument.

The case studies were categorised in order to determine the similarities and differences between them in terms of successful growers and transformers versus non-successful growers and transformers. Comparisons were then made on the basis of the emerging dynamic patterns while putting emphasis on within-category similarities and inter-category differences. The logic behind the categorisation of the cases was to flesh up growth and transformation

⁶ The cities covered were Accra, Tema, Kumasi, Takoradi and Cape Coast. In all 823 firms were listed and this constituted the sampling frame. Out of 823 firms that were listed, micro firms accounted for 429 (52.1%) and small firms accounted 394 (47.9%).

⁷ The specific working samples were 242 for Ghana, 206 for Kenya and 211 for Zimbabwe.

patterns identified through analysing the broad survey data. This generated additional information about the patterns of evolutionary change and learning processes of small firms that transformed and grew. The case studies also provided a window to understanding how small firms overcome the institutional constraints they face during the different stages of their lifecycles.

References

Baah-Nuakoh, A., F. E. Turkson, K. A. Baah-Nuakoh, and W. Baah-Boateng, (2002). 'Multi-country Study on the Growth and Transformation of Micro and Small Scale Manufacturing Firms in Africa: The Ghana Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

Bardhan, P. (1989). *Conversation Between Economists and Anthropologists: Methodological Issues in Measuring Economic Change in Rural India*. Delhi Oxford University Press.

Devereux, S and J. Hoddinott. (1992). *Fieldwork in Developing Countries*. London Harvester Wheatsheaf.

IPAR, (2002). 'Multi-country Study on the Growth and Transformation of Micro and Small Scale Manufacturing Firms in Africa: The Kenya Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

Moyo, T., T. Mumvuma and S. Sibanda, (2002). 'Multi-country Study on the Growth and Transformation of Micro and Small Scale Manufacturing Firms in Africa: The Zimbabwe Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

CHAPTER FOUR

How Can Small Firm Dynamics Be Viewed?

Two important issues arise in discussing Africa's firm size and growth. The first issue is the "missing middle" in the sense that there is some barrier to the growth of firms above a certain size (Kilby, 1988). The second issue is the role of small firms in the economy deriving from the missing middle phenomenon. An outcome of this phenomenon is that the size distribution of firms is likely to be bimodal, with small African owned firms co-existing with much larger firms under foreign ownership or control. Diseconomies discourage the growth of the former. Small firms differ significantly from larger ones in the capital, technology, and managerial resources available to them (Fafchamps 1994). Adequate capital is crucial to firm progression, so that initial capital is likely to be a determinant of the current size of a firm and type of business a firm engages in, for firms need sufficient capital to secure machines, buy materials, and acquire appropriate premises.

The cost curves of small firms are humped (Fafchamps, 1994), so that firms entering the industry at different sizes have highly differential incentives to growth. Firms starting small face increasing unit costs and a severe disincentive to further investment. Only firms starting at sizes beyond the hump have the decreasing unit costs necessary to encourage growth. The high cost of imported raw materials that pose the most important growth constraint for manufacturers of soap and cosmetics, has minimal impact on textile and garment producers and none on producers of furniture (Steel and Webster 1990).

Technology is an important growth stimulant. The resources needed to manage and productively use newly acquired technology include skills, knowledge, experience and institutional structures and linkages. Technological capability needs to be treated not as a by-product but an activity in its own right.

A further variable that limits growth is management, giving rise to the "Penrose effect". According to this effect, there is a limit to what an enterprise's management can do. Thus, a lack of suitable management can constrain growth. Differences in management quality are possible reasons for observed difference in the growth prospects of firms.

In his theory of X-efficiency, Leibenstein (1966) argues that allocation of resources is perceived as less important than effectiveness of use of resources so that efficiency is crucial. Inter-firm differences in how well management functions are organized result in substantial differences in productivity for specified combinations of physical quantities of capital and labour⁸.

Substantial literature has been developed to determine the origins of entrepreneurship and identify determinants of entrepreneurial success measured by the rate of profit or by the rate of growth of the firm. Efforts to identify important entrepreneurial characteristics associated with the growth or profitability of small enterprises have been unsuccessful. In this regard, the relationship between education and business success in Africa has been studied. Studies consistently find weak and frequently negative relationships between education and entrepreneurial success (Dan Dijk, 1978; Liedholm and Chuta, 1976; Harris, 1971; Nafziger, 1970; Kilby 1965). Nevertheless, functional literacy seems positively correlated to the profitability of small firms. There is a significant positive relationship between profitability and the age of an enterprise (Liedholm and Chuta 1976). Entrepreneurs who keep financial records are more successful than those who do not. In surveys, which included questions regarding the presence of an accounting system, maintenance of financial records was positively and significantly correlated with the profitability of the enterprise (Liedholm and Chuta, 1976).

Education may enhance a person's managerial and technical skills, an important characteristic of a small-scale proprietor is one's educational attainment. Two indicators of experience are the distribution of proprietors by age and by occupation before they become owners. Assuming that age and experience are positively related, then the age distribution of small-scale proprietors gives some indication of their experience.

Enterprises can be viewed as positively transformed when they shift from an inhibiting institutional threshold to a more progressive one so that from then on they become subject to different rules of the game. This shift can be either intentional such as when it is an outcome of a deliberate managerial decision, or simply in-advertent (IPAR, 2002). The transformational outcomes may be simple or complex. Consider for example what happens when a firm that was operating informally gets registered with a registrar of companies. This single,

⁸Estimating the impact of management on productivity is not trivial. Researchers have attempted to measure management as a residual in production. However, such a residual also captures other things such as technology. Others use proxies such as the education level and experience of managers but such proxies, though obviously correlated with management, are unable to capture the quality of management. See also Baah-Nuakoh (2002).

apparently pedestrian, event exposes the firm to different operational rules. It subjects firms to state regulations such as licensing requirements, labour laws, health requirements and tax assessments that in turn expose them to perverse institutions such as bureaucratic red tape and corruption. For firms initially operating as unregistered, registration fundamentally changes the rules of the game that henceforth shape the firm's operations. Yet, registration obviates much of the official harassment by local authority agents to which many informal firms are subject, improves certainty of status needed for accessing public services such as electricity, telephone and water, and permits firms to tag on to formal financial institutions and expand market outreach beyond national boundaries.

This simple analysis of what happens following firm registration exemplifies the process of transformation similarly typified by other progressively complex processes such as changes in premises, regularity of operations, shift in the direction of keeping books of accounts and business records, changes in operational shifts, ownership and management style, debut into the export markets to the more complex transformations associated with firm growth, graduation and technological upgrading. The overriding consequence of transformation is the fundamental change in the rules of the game context that define the new institutional environment in which a newly transformed firm operates, and the interfacing of firm and entrepreneur specific attributes with this wider institutional context. On this account, enterprise transformation tends to be multi-dimensional.

Enterprise growth and transformation help unleash the employment and wealth creation potential of firms. The lack of growth and transformation is therefore inherently counter-developmental, so the circumstances that constrain these firm dynamics should always invite investigation. Enterprises that neither grow nor transform deny society developmental benefits of a vibrant private sector. Small enterprise dynamics may be interpreted as referring to forces that influence enterprise growth and transformation. These forces are fuelled by a mixture of micro level institutions that are entrepreneurial and firm specific, and the response by such micro level institutions to both wider institutions such as legislation and reforms and wider processes such as globalisation. The potential for firm growth and transformation is therefore resident in the broad institutional contexts that are part of a nation's business systems.

Enterprise dynamics facilitate adjustment toward points of optimality in the lifecycle of firms. The optimal size of a firm is itself a function of the institutional context in which a firm operates. The dynamics are partly an outcome of shifts in aspects of the institutional context while others result from the fact that the search for points of optimality is essentially continuous even in the absence of significant changes in the institutional context.

More formally, the dynamics of firms can be presented as follows: between any two time periods, t and $t+i$ where $i > 0$, an enterprise will come into existence, prosper and grow, or stagnate and die. There is a more complex dynamic that could take place between t and $t+i$, however. We refer to this complex dynamic as enterprise transformation, defined earlier as involving changes in the structure of enterprises that in turn expose a firm's operations to different rules of the game.

The manifestations of transformation may include a change from informality to formality, a movement from low value adding to high value adding activities such as manufacturing, changes in the composition, quality and diversity of products, changes in location as well as shifts in the ownership structure and managerial outlook. Often, the growth of a firm may be necessary for transformation but such growth is not sufficient for transformation.

Firm growth may be subject to the "Gibrat Law" according to which the initial size of a firm is immaterial with regard to the probability for a proportional increase in such size over a specified interval. When such a proportional increase occurs, it is independent of the size of a firm. Alternatively, firm growth may follow the Jovanovic hypothesis that suggests the presence of an inverse relationship between firm growth and age or a disproportionate growth across firms depending on their age (Varyam and Kraybill, 1992). The Jovanovic hypothesis builds on an assumption about the existence of randomly distributed cost-function shocks with transitory and time invariant components. The latter represents managerial inefficiencies related to lack of experience in production. This cause of inefficiency is unknown to the enterprise at the beginning. Where production relations imply that output is a decreasing but convex function of managerial inefficiency, the Jovanovic hypothesis concludes that young enterprises will grow faster than older ones.

But rather than desiring to grow, enterprises may be happy to remain small (O'Farrell, Hitchens, 1988) especially where future enterprise goals of owner-managers may be determined by family considerations and personal life-styles. Enterprises may of course prefer a strategy of survival rather than expansion. This is especially likely where economic independence is the primary preoccupation of the business person. Since a firm-growth strategy often dilutes ownership, many owner-managers and partnerships may prefer to remain small to preserve ownership. Others may shun growth for fear of becoming obtrusive and attracting attention from third parties such as labour unions, competitors and tax authorities. The response to risk and uncertainty may also shape the eventual size of an enterprise (McCormick, 1993). Entrepreneurs are generally risk-averse, so that the way they respond to risky situations has

growth and transformation implications⁹. They may prefer meagre but certain returns to high but variable returns, or have a “safety first” response by securing pre-determined income levels. This strategy necessitates the establishment of safety nets through product mixes, locations and enterprise sizes.

Firm growth may also embody the “Penrose effect,” according to which the management capacity limits the rate of firm growth¹⁰. At any one point, an enterprise’s management can increase its capacity only to a certain extent. Lack of suitable management therefore constrains enterprise growth. Fast growing enterprises may be forced to slow down as they recruit new managers.

In any case, entrepreneurial and institutional forces underlie the growth and transformation of small enterprises in Africa. The entrepreneurial attributes relevant to firm growth and transformation should therefore include variables such as an entrepreneur’s age, level of formal education, gender, training, experience and previous occupations. The impact of firm-specific attributes such as business activity, location, firm age, ownership structure, legal status, the structure of the market in which the firm operates and networking inclinations are also key to the firm growth and transformation process. But it is the response to changes in the wider macro-economy including policy induced changes, and the firms’ ability to lurch on to such changes that fuel transformations and shape enterprise lifecycle trajectories.

Most firm growth studies begin with Gibrat’s law, mentioned earlier, according to which the probability of a proportionate increase in firm size over a time interval is the same for all firms regardless of their size at the beginning of the interval. The probability of firm growth is independent of firm size and is a statistical phenomenon resulting from the cumulative effects of random occurrence of a large number of forces that operate independently. One outcome of this law is that firms of all sizes have the same probability distribution of growth rates. Actual growth rates however differ over any particular periods because some firms will have more luck than others, making the growth process of firms a random process.¹¹ This conclusion is consistent with Geroski’s (1999) view that the growth of a firm follows a “random walk” and is erratic and unpredictable. This is because most firms are sporadic innovators in the sense that firms typically innovate only once in a while then go a long time before the next innovation. Firm growth mimics the erratic innovation so that firm

⁹ McCormick (1993) defines risk aversion as preference for riskless or low risk situations.

¹⁰ The ‘Penrose effect’, reported in O’Farrell & Hitchens (1988), is attributed to Penrose (1957).

¹¹ If Gibrat’s law holds, then the implication is that the size distribution of firms does not matter for attaining the policy goal of job creation in Africa.

growth spurts are unpredictable.¹²

The stochastic nature of the firm's growth is a useful ingredient in any theory of firm growth. The assumptions and implications of stochastic theories however are at variance with the actual processes of firm growth. Studies have consistently shown that firm growth is inversely related to firm size, leading to the conclusion that small firms grow faster than large firms (Evans, 1987). There is failure in these studies to appreciate the role of entrepreneurship, however. Entrepreneurs pursue differing sets of objectives and make resource allocation decisions in the context of risk, uncertainty and market imperfections. Differences in endowment of entrepreneurial talent mean that prospects of different firms are bound up with the owner's managerial capabilities. These empirical and theoretical deficiencies of the stochastic theories of firm dynamics led Lucas (1978), Kihlstrom and Laffont (1979) and Jovanovic (1982) to generate new theories that emphasise managerial efficiency and learning-by-doing as determinants of firm dynamics.

Entrepreneurs endowed with managerial ability become successful and promote firm growth while others close their firms and become workers (Lucas 1978). Managerially able entrepreneurs eventually absorb those not equally able as employees while managerially able employees eventually form businesses (Liedholm and Mead 1991). The Lucas model assumes that firms have fixed organisational inputs so that firms of different sizes may be equally efficient at the margin, while firms with superior fixed inputs will be larger than others. The size distribution and growth of firms therefore depends on the given distribution of such inputs. From this perspective, any economic system should have, in equilibrium, two distinct categories of economic agents: entrepreneurs and workers. The greater the talent of an economic agent, the larger the size of the firm he or she manages. This model explains a common observation that the number of small firms increases during recessions but declines or stagnates during economic booms. In the model, the wage rate represents the opportunity cost of starting a business, falling real wages and the rising unemployment during recessions induces economic agents who are wage-earners to switch to setting up their own small firms. The model, however, does not take into account the role of risk in the growth and transformation of firms. An improvement of the Lucas' firm size distribution model has been achieved by explicitly incorporating

¹² This can also be caused by the fact that in the real world firms typically restructure their operations in big, infrequent bursts, rather than with small, continuous adjustments often as a result of a severe crisis that smashes any barriers to change. In some cases, such a severe crisis can be also the catalyst for innovation and enterprise transformation. Note that vision and leadership, amongst other factors, are also key to successful enterprise transformation.

considerations for risk and uncertainty (Knight, 1921).¹³ Risk determines who does and who does not become an entrepreneur, for the entrepreneurial class emerges from the group of risk takers while risk-averse individuals tend to become workers. In the context of firm dynamics, enterprise growth and transformation is limited by the individual entrepreneur's willingness to take risks, while attitude to risk influences entrepreneurs' investment strategy as it has a bearing on growth and transformation.

Firm growth and survival are linked to firm size and age through the level of efficiency (Jovanovic 1982). Here, a firm's cost functions are subject to randomly distributed shocks. These shocks consist of time-in-variant, firm-specific and transitory components distributed independently over firms and periods. The permanent component represents managerial efficiency ascertained at start-up, though firms learn about their efficiency levels and true cost functions through experience in production. Through this model, therefore, entrepreneurs learn about their efficiency during a firm's lifecycle as they operate their businesses and adjust their entrepreneurial behaviour accordingly.¹⁴ Learning-by-doing therefore is important in the dynamics of firms. The implication is that younger firms will grow faster than older firms when output is a decreasing convex function of managerial inefficiency.

However, an entrepreneur's limited capacity to learn imposes a temporary limit to the firm's operations and size (Penrose 1980). Limited learning capacity puts a brake on the discovery of better ways of reducing costs and satisfying customers. The accumulation of knowledge is a function of the capacity to internalise: the transformation of formal knowledge into informal and tacit knowledge so that it is possible to economise on scarce decision competencies (Knudsen, 1996). In turn, managerial resources are released for solving emerging problems and releasing the growth potential bound up in firms. These mechanisms of knowledge accumulation are the prerogative of both entrepreneurs and employees, for the efficiency of the firm's human resources increases over time and employees accumulate knowledge and adeptness in

¹³ Knight is one of the pioneers who attempted to explain the existence of the firm. His analysis of the firm as an institutional arrangement for efficient risk sharing is based on risk aversion and costly knowledge as well as the need to economize on the use of scarce management resources.

¹⁴ Marshall (1920) was the first to propose the idea that firms go through a lifecycle. He took an evolutionary approach to analyze processes of firm dynamics. Marshall designed his theory in such a way that human fallibility prevented the entrepreneurial learning process to take place in such a way that it will lead to the emergence of large firms. In the long run firms were expected to decline and latter die either because of bankruptcy or voluntary liquidation.

dealing with the external environment and the administration of the firm.¹⁵ Although the profitability due to economies of scale contributes positively to persistent growth of firms, the growth rate is often attenuated by the Penrose effect.¹⁶

Entrepreneurs able to learn and contain their costs are more likely to own firms that survive, transform themselves and grow (Jovanovic, 1982). However, it is possible that entrepreneurs may be unable to initially accurately assess their entrepreneurial abilities. Further uncertainty may also relate to the business venture itself. Given possibilities of learning differentials among entrepreneurs, this model touches upon the main drivers of the entry, exit, growth and transformation of small firms. The learning process endogenously built into the argument “dynamizes” the model of firm growth and transformation, and predicts that the probability of business failure declines with firm age because older firms are likely to have more precise estimates of their true efficiencies. The variance of the growth rate among surviving firms however decreases with firm age. A further outcome of the Jovanovic hypothesis is that controlling for firm age, both the failure rate and the growth rate of the surviving firms are negatively related to firm size.

One implication of the Jovanovic model is that the share of small firms grows when the birth rate of firms increases, since small firms tend to be small (You, 1995). Newly born firms have lower survival rates than older ones because the learning process of entrepreneurs takes place over time, so that young firms that have both less precise estimates of their true abilities and less time to learn are more likely to be put out of business by external shocks.

Firm dynamics can be analysed using the structure-conduct-performance (SCP) model that assumes a causal link between market structure, firm behaviour and firm performance. The SCP model recognises that firms affect market structure which in turn affects firms. The conditions of the local market shape

¹⁵ In essence, this may be taken also to mean that a firm’s performance is determined by building on a set of key skills or core competencies, which are difficult to imitate that distinguish it from its rivals. These might include better technology, a trusted brand name or the experience of its employees as argued by Penrose.

¹⁶ The basic argument underlying the Penrose effect is that growth is something that requires preparation and then consolidation. It is therefore subject to some upper limit over a long period of time. Growth requires surplus resources or new resources, management awareness and preparatory planning, and willingness by the entrepreneur/management to take risks. According to Penrose, the latter requirements are least likely to be fulfilled after a firm has just expanded considerably and are more likely to be fulfilled by a firm, which has been in lull.

a firm's initial business experience and growth prospects. For small firms the scope for penetrating lucrative markets may be limited by high degrees of vertical integration and concentration of market power in a few large firms. Limited access to markets, including financial and export markets, means that small firms may not exhibit sufficient internal dynamism.

In addition, transaction costs count. At the margin, the cost of organising within the firm will be equal to the cost either of organising in another firm or of leaving the transaction to market forces and the price mechanism (Coase, 1937).¹⁷ This is a positive institutional theory of firm size distribution and enterprise transformation that requires an identification of the factors that determine such costs.¹⁸ The structure of laws consequently shapes the structure of firm dynamics.

References

Baah-Nuakoh, A., F. E. Turkson, K. A. Baah-Nuakoh, and W. Baah-Boateng, (2002). 'Multi-country Study on the Growth and Transformation of Micro and Small Scale Manufacturing Firms in Africa: The Ghana Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

Coase, R.H., (1937). 'The Nature of the Firms' *Economics* 4, pp.386-405.

Demsetz, H., (1991). 'The Theory of Firm Revisited' in Williamson, O.E and S. Winter (eds.) *The Nature of Firm Origins, Evolution and Development*. New York, Oxford University Press.

Evans, D., (1978). 'Tests of Alternative Theories of Firm Growth' *Journal of Political Economy*. 86(4), pp.657-674.

Fafchamps, M. (1994). 'Industrial Structure and Micro-enterprises in Africa' *The Journal of Developing Areas*. 29, pp.1-30.

Geroski, P. (1999) 'The Growth of Firms in Theory and Practice' CEPR Discussion Paper No.2092.

Harris, J. (1971). 'Nigerian Entrepreneurship in Industry' in Kilby, P. (edt.) *Entrepreneurship and Economic Development*. New York, The Free Press.

¹⁷Demsetz (1991) interprets this statement by Coase to mean that profit maximization or efficiency considerations requires the substitution of firms for markets if the costs of using markets becomes larger than the costs of managing. But Demsetz sees some faults in this way of conceptualization by transaction costs theory because it neglects other potential determinants of economic organization.

¹⁸ Williamson's works (1975, 1985) are prominent in this respect.

IPAR. (2002). 'Multi-country Study of the Growth and Transformation of Small Manufacturing Firms: the Kenya Case' Final Report Submitted to the African Centre for Economic Growth, Nairobi.

Jovanovic, B., (1982). 'Selection and Evolution of Industry' *Econometrica* 50, pp.649-670.

Kilby, P., (1965). *African Enterprises: The Nigerian Bread Industry*. Stanford, Stanford University Press.

Kihlstrom, R and J.J Laffont, (1979) 'General Equilibrium Entrepreneurial Theory of Firm Formation based on Risk Aversion'. *Journal of Political Economy*. 87 (4), pp.717-748

Knight, F., (1921) *Risk, Uncertainty and Profits*. New York, Harper and Row Publishers.

Knudsen, C., (1996) 'The Competence Perspective: A Historical Review' in Foss, N J and C. Knudsen (eds.) *Toward a Competitive Theory of the Firm*. London, Routledge.

Marshall, A., (1920) *Principles of Economics: An Introductory Volume*. 8th Edition, London Macmillan.

McCormick, D., (1993) 'Risk and Firm Growth: the Dilemma of Nairobi's Small Scale Garment Manufacturers' Discussion Paper No. 291. Institute of Development Studies, University of Nairobi.

Moyo, T., T. Mumvuma and S. Sibanda, (2002). 'Multi-country Study on the Growth and Transformation of Micro and Small Scale Manufacturing Firms in Africa: The Zimbabwe Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

O'Farrell, P.N and Hitchen, D.M.W.N., (1988). 'Alternative Theories of Small Firm Growth: A Critical Review'. *Environment and Planning*. 20.

Penrose, E., (1959). *The Theory of the Growth of the Firm*. Oxford, Blackwell Scientific Publications.

Leibenstein, H., (1966). 'Allocative Efficiency versus X-efficiency' *The American Economic Review*. 56, pp. 382-415.

Liedholm, C., and E. Chuta, (1976). 'The Economics of Rural and Urban Small Scale Industries in Sierra Leone' *African Rural Economy Paper No. 14* Michigan State University, East Lansing.

Liedholm, C and D. Mead, (1991). 'Dynamics of Microenterprises: Research Issues and Approaches' GEMINI Working Paper Number 12. Michigan State University, East Lansing.

Lucas, R. E., (1978). 'On the Size Distribution of Business Firms' Bell Journal of Economics.

Steel, W. and Webster, L. (1992). 'How Small firms in Ghana Have Responded to Adjustment' The World Bank Economic Review 6 (3).

Varyam J. N. and D. S. Kraybill, (1992). 'Empirical Evidence of Determinants of Firm Growth' Economic Letters 10(11), pp. 913-948.

Williamson, O.E., (1975). Markets and Hierarchies: Analysis and Antitrust Implications. New York, Free Press.

Williamson, O.E., (1985). The Economics Institutions of Capitalism. New York, Free Press.

CHAPTER FIVE

Size Categorisation and Distribution of Small Firms

Firm sizes can be measured by assets, sales, output, employment or a combination of these factors. In practice however, employment is frequently the preferred measure because information on capital and output is not easily available and is unreliable. On the other hand, information on workers is accurately remembered by entrepreneurs. For some manufacturing activities, a strong statistical relationship exists between employment, capital size and output levels so that grouping of enterprises on the basis of employment provides a defensible proxy for the complex measure of firm size. Use of employment figures also obviates the need to adjust for inflation.

Changes in employment however occur with a lag so that employment represents only a lower bound on enterprise size. Since human capital attributes vary from one employee to another, workers' skills remain an issue when using employment as a measure of size (Mead and Liedholm, 1998; McCormick, 1993). Although studies have used size measures that are either based on employees or workers, there is convergence towards increased use of workers rather than employees because enterprises pool not only employed workers but also apprentices and unpaid relatives and proprietors. For the small firm sector, working proprietors and unpaid family members often dominate the workforce (Mead and Liedholm, 1998).

The term "micro and small scale enterprises" is increasingly used in reference to enterprises with a maximum of 50 workers (McCormick, 1993; Mead, 1994). We follow this tradition by using workers as a proximate measure of firm size and target firms that have a maximum of 50 workers as objects of further analysis. The entire sample is then categorized into these sizes: micro1 (maximum 5 workers), micro2 (6-10 workers), small1 (11-29 workers), small2 (30-50 workers), and other (more than 50 workers).

More than half of the sampled firms were in the 1-5 workers' category, many of them being single-person operations. The single-person operations therefore account for one quarter of the entire sample put together. The size distribution is therefore skewed toward the smaller end of the sector. It however is also

somewhat bimodal, with the proportions of firms in the 11-29 and 30-50 workers' categories being greater than those for the 6-10 workers' category.

Meeting family needs and securing the families financial future dominate other motivation for establishing small manufacturing operations in Africa. The specific percentages of entrepreneurs giving these as their motivations are 60% in Ghana, 50.2% in Kenya and 63.5% in Zimbabwe. These motivations are particularly important for the very small firms with 1-5 workers in Kenya and Zimbabwe where more than 60% of the firms were established to meet family needs. The corresponding figure for Ghana is 23%. It is also significant that while only a small percentage of small manufacturers in the three countries state that they are in business for lack of alternative occupations (8.9% in Ghana, 11.7% in Kenya and 10.9% in Zimbabwe), the majority of the firms in the 1-5

Table 5.1: Firm Size Categorisation

Size categories	Country		
	Ghana	Kenya	Zimbabwe
Micro 1 (1-5 workers)	14.4	50.24	56.9
Micro 2 (6-10 workers)	20.8	10.14	27.5
Small 1 (11-29 workers)	35.6	19.32	12.8
Small 2 (30-50 workers)	15.2	13.04	2.9
Other (>50 workers)	14.0	7.25	-
Total	100.0	100.00	100.0

Table 5.2: Firm Size Distribution by Location

Size category	Size distribution by capital city	
	Accra-Ghana	Nairobi-Kenya
Micro 1	13.0	49.6
Micro 2	24.0	10.3
Small 1	28.7	12.0
Small 2	19.1	20.5
Other	14.8	7.7
Total	100.0	100.0

workers' category which are in business for lack of alternative occupations business for lack of alternative occupations account for 50% of the firms in Ghana, 79.2% in Kenya and 69.7% in Zimbabwe. This suggests that many of the small manufacturers that are in business for lack of alternative occupations are very small. This juxtaposition of the need to meet family needs and the absence of alternative occupations are the driving forces behind the establishment of many micro manufacturing operations that are now common in Africa. Little wonder then that many of these operations are abandoned when better means of meeting family needs come along. More generally, reasons for starting business firms somewhat determine prospects faced by different firms and have a definite bearing on the eventual sizes of firms.

Founding is the most common method of establishing small manufacturing firms in Africa, and accounts for the coming into being of 87.1% of the firms in Ghana, 70.1% of the firms in Kenya and 91% of the firms in Zimbabwe. Furthermore, founding is particularly important for the very small manufacturing firms and accounts for more than three quarters of these establishments. There is also a notable gender dimension in the size distribution of micro and small manufacturing firms in Kenya. Whereas at least three quarters of the enterprises are male-owned, female ownership is important in the very small operations. As an example, 93% of all women small manufacturers in Kenya are found among the 1-5 workers' category. Only one of the women-owned enterprises in Kenya has more than 5 workers; the majority of the female-owned enterprises are single-person operations. In Ghana, 24% of the small manufacturers are women and half of these have a maximum of 10 workers. Twenty of the manufacturers in Zimbabwe are women, 74% of whom are in the 1-5 workers' category; none of the women owned enterprises have more than 30 workers. Ghana therefore is an exception in the sense that many of women-owned small manufacturing enterprises are on the larger side of the size scale. Like race, the gender dimension in the size distribution of manufacturing firms in Kenya reflects problems borne by women entrepreneurs such as poor access to assets with collateral value, irregularity of operations, and limited working capital. Considering the importance of own savings in financing business start-ups in Africa, entrepreneurs previously holding more lucrative regular jobs are better able to save and start bigger.

Although ownership of the firms spans different races, the majority of the firms are owned by Africans. For example, 95% of the Ghanaian and 98% of firms in Zimbabwe are African owned. Kenya shows a more egalitarian racial balance. Here, Africans own 57% while Asians own 41% of the small manufacturing firms. This aside, African entrepreneurs concentrate efforts in the smaller segment of small manufacturing enterprises. As an example, 82% of the 1-5 workers'

category of firms in Kenya and 100% of those in Ghana are Africa-owned. The African side of the racial factor represents limited access to resources, limited business experience and lack of necessary heritage. Current African business persons are also the first generation of entrepreneurs.

Entrepreneurs of small manufacturing firms in Africa come from varying backgrounds. The majority of them however were employees in private or public sectors. In Ghana, for example, 64% of the entrepreneurs were previously in regular and casual employment in the private and public sectors, though three quarters of these were in regular employment while the majority of the rest were not in any occupation previously. In Kenya, 65% were previously employed in the private and public sectors, the majority of them having been in formal employment in the private sector while more than three quarters of the rest had no previous occupations. In both Ghana and Kenya, more than a third of the 1-5 workers' category of firms was owned by persons without any previous occupation.

There is evidence of an educational factor in the size distribution of the small manufacturing firms in Africa. In Ghana, more than 30% of the firms are owned by persons with middle school level of formal education. In Kenya and Zimbabwe, the greatest percentage of proprietors has at least "O"-Level standard of education. The specific proportion of entrepreneurs with "O"-Level standard of education is 29% in Kenya and 40% in Zimbabwe. Each country also has a significant proportion of small manufacturing entrepreneurs with university level of education, the proportion of entrepreneurs with such education varying from 16% in Ghana, 14.7% in Kenya, and 2.8% in Zimbabwe. There are also illiterate people among the small manufacturers in Africa, the respective proportions being 7.7% in Ghana, 4.8% in Kenya, and 1.4% in Zimbabwe. The educational attainment of small manufacturers varied most widely in Ghana, where the proportion of illiterate people as well as those with university education is the greatest. More broadly, entrepreneurs of small manufacturing firms are also relatively less educated in Ghana than in either Kenya or Zimbabwe.

In Ghana, more than 80% of the 1-5 workers' enterprises are owned by persons with less than "O"-Level standard of formal education. The corresponding proportions are 45.2% and 37.5% for Kenya and Zimbabwe, respectively. Generally, there are very few entrepreneurs who have less than "O"-Level of education operating firms with more than 30 workers. Firms within this size range are owned by persons with either university, technical or professional qualifications. Skill levels therefore count not just for entry into manufacturing but also eventual firm size.

There is also a firm age-size nexus. Twenty nine percent of the baby firms

(that is, less than 5 years old) in Ghana are very small (1-5 workers). Here, baby firms account for 22% of the sample. The respective figures for Kenya and Zimbabwe are 68.4% and 66% where baby firms account for, respectively, 12.5% and 47.4% of the entire sample. Old firms (more than 20 years) account for 21.2%, 11.47% and 5.4% of the samples in Ghana, Kenya and Zimbabwe, respectively. Of these sub-samples of old firms, the proportion of those that are extremely small are 11.1%, 38.14% and 46.2% for Ghana, Kenya and Zimbabwe, respectively. We therefore conclude that although there are only a few very small manufacturing firms in Africa that are also old, the majority of the very small firms are young. Age consequently seems to count for size, so that the small manufacturing entities have to live long to eventually become larger.

In addition, the structure of ownership has a bearing on the size distribution of the firms. The private local structure of ownership is most common in Ghana, where it accounts for 70.1% of the sample. In Kenya and Zimbabwe, family ownership is most common and accounts for 59.4% and 57.8% of the firms, respectively. These two forms of ownership account for 93.2%, 94.1% and 95.7% of the samples in Ghana, Kenya and Zimbabwe, respectively. Whereas in Ghana, 83.3% of the 1-5 workers firms are private and the rest family in status, 53.4% and 60% of this size of firms in Kenya and in Zimbabwe, respectively, are under the family ownership structure. In the three countries, there are very few firms in this size that are under either government, foreign or joint ownership structure. Firms under these ownership structures are few but generally larger.

Sole proprietorships are the most common forms of legal status for most of the firms, and account for 62.2% in Ghana, 51.5% in Kenya and 82.9% in Zimbabwe, respectively. Limited liability is the second most important form of legal status, and claims 32.5%, 25.1% and 7.1% of firms in Ghana, Kenya and Zimbabwe, respectively. Partnerships are important especially in Zimbabwe. In Ghana, 88.9% of all the 1-5 workers' category of the firms are sole proprietorships, comparing with 78.4% in Kenya and 61.8% in Zimbabwe. There are very few firms with more than 30 workers that are under sole proprietorship legal status.

Many of the firms are owner managed so that there is very little use of employed managers. Larger firms are an exception since some rely on employed managers. For example, nearly a half of the Kenyan firms with paid managers have more than 30 workers. In Ghana, all the 1-5 workers' category of firms and 98% of the 6-10 workers' category of firms are owner-managed; in contrast, 73.6% of the firms with employed managers had more than 30 workers. Many of the smaller firms (that is, firms with less than 10 workers) dominate firms funded through family and own saving. Bank loans are hardly used for financing start-ups except by the relatively larger firms. In Kenya, for example, 56% of firms that started up using bank loans have more than 30 workers. These findings thus confirm resource and managerial limitations that confront

family ownership and sole proprietorships.

This section has demonstrated that the size distribution of small manufacturing firms in Africa is skewed to the left, confirming other findings that have demonstrated that the size distribution of industrial firms tends to have many small and few large firms. This distribution is an outcome of two processes: that the scarcity of local capital forces indigenous firms to start small and grow horizontally and that foreign direct investments and capital intensive technologies allow some, usually foreign, firms to start and remain large. This state of affairs partly accounts for the missing middle phenomenon common during early industrialisation. Although less pronounced in industrialised countries, this "skewness" in the size distribution of industrial plants persists through different stages of industrialisation (McCormick, 1993).

In terms of the ownership structure, there is evidence of dualism in African manufacturing, with indigenous entrepreneurs typically owning smaller firms while their minority European and Asian counterparts own the medium-sized and large firms (Oostendorp, 2002).¹⁹ Industrial sectors of many countries are dualistic with a very large number of minute firms, a small number of large firms, but very few medium-sized firms in between (Fafchamps, 1994). This is partly because the regulatory, enforcement and transaction costs are higher for medium-sized than for the smaller and larger firms.

The one-worker enterprises that dominate early stages of industrialisation are self-employment activities often operated informally by poorly educated, African female proprietors while the two worker operations are usually a mixture of unpaid family and paid workers. Beyond two workers, operations tend to become formalised, and the management structure changes toward paid managers. Where this does not happen, a binding management bottleneck begins to manifest itself when the firm has more than six workers (Parker and Torres, 1994). Human capital attributes such as education, race and gender that in turn determine an entrepreneurs' ability to tag-on to financial and managerial resources ultimately determine the size of a firm.

¹⁹ The literature review part of this section is mainly derived from Oostendorp (2002: 41-43)

Table 5.3: Firm Size Distribution by Sector

Size categories	Manufacturing activities											
	Food processing			Wood working			Textile & garments			Metal working		
	Gh	Ke	Zimb	Gh	Ke	Zimb	Gh	Ke	Zimb	Gh	Ke	Zimb
Micro 1	6.5	35.6	81.6	14.5	52.0	45.3	25.0	67.4	46.6	10.8	48.1	52.5
Micro 2	26.1	13.6	10.9	18.1	4.0	43.8	19.6	0	31.8	21.5	21.2	23.7
Small 1	34.8	23.7	7.6	36.1	18.0	10.9	33.9	18.6	14.8	36.9	17.3	17.9
Small 2	15.2	18.6	0	14.5	16.0	0	14.3	7.0	6.6	16.9	9.6	5.4
Other	17.4	8.47	-	16.9	10.0	-	7.1	7.0	-	13.8	3.9	-
All	18.4	28.9	25.6	33.2	24.5	26.1	22.4	21.1	12.8	26.0	25.5	2.8

Table 5.4: Firm Size Distribution by Gender

Firm Size	Proportion of firms by gender of proprietor (%)								
	Male			Female			Mixed gender		
	Gh	Ke	Zimb	Gh	Ke	Zimb	Gh	Ke	Zimb
Micro 1	13.3	47.1	40.8	19.7	13.5	14.7	0	0.96	1.4
Micro 2	17.2	11.1	21.8	31.1	0	4.3	22.2	0	1.4
Small 1	37.2	20.1	10.4	31.1	0	0.03	33.3	5.0	1.4
Small 2	15.6	13.8	1.4	11.5	3.7	0	33.3	0	1.4
Other	16.7	7.9	-	6.6	0	-	11.1	0	-
All	72.0	91.3	74.4	24.4	7.3	19.9	3.6	1.5	5.7

KEY

Gh - Ghana

Ke - Kenya

Zimb - Zimbabwe

Table 5.5: Size Distribution by Firm Age

Firm size	Firm age											
	Baby (<5 years)			Young (5-10 years)			Mature (11-20 years)			Old (>20 years)		
	Gh	Ke	Zimb	Gh	Ke	Zimb	Gh	Ke	Zimb	Gh	Ke	Zimb
Micro 1	29.1	68.4	66.0	7.9	28.6	49.3	15.6	50.0	48.6	7.5	38.1	46.2
Micro 2	25.5	10.5	27.0	23.7	0	34.6	21.9	13.6	23.2	11.3	10.3	9.6
Small 1	23.6	10.5	5.9	43.4	35.7	13.2	32.8	18.2	23.4	39.6	29.9	26.9
Small 2	12.7	10.5	1.1	14.5	21.4	3.1	14.1	18.2	2.7	20.8	10.3	17.3
Other	9.1	0	-	10.5	14.3	-	15.6	0	-	20.8	11.3	-
All	22.0	12.5	47.4	30.4	9.2	28.9	25.6	14.5	18.5	21.2	63.8	5.2

Table 5.6: Size Distribution by Legal Status

Firm size	Legal status											
	Sole proprietorship			Partnership			Limited liability			Joint local/foreign, subsidiary, other		
	Gh	Ke	Zimb	Gh	Ke	Zimb	Gh	Ke	Zimb	Gh	Ke	Zimb
Micro 1	20.6	76.2	61.8	15.4	36.6	54.7	2.5	7.8	7.0	0	50.0	0
Micro 2	26.5	11.4	26.9	23.1	9.8	29.5	8.6	9.8	26.8	0	0	100
Small 1	38.1	8.6	10.3	30.8	39.0	14.7	32.1	27.5	39.4	0	0	0
Small 2	7.7	1.0	1.1	30.8	12.2	0	27.2	33.3	26.8	0	50.0	0
Other	7.1	2.9	-	0	2.4	-	29.6	21.6	-	0	0	-
All	62.2	51.5	82.9	5.2	20.1	9.5	32.5	25.0	7.1	0	3.4	0.5

KEY

Gh - Ghana

Ke - Kenya

Zimb - Zimbabwe

Table 5.7: Size Distribution by How Firms Were Started

Firm size	Method of Start-Up					
	Founded		Inherited		Bought	
	Ghana	Kenya	Ghana	Kenya	Ghana	Kenya
Micro 1	15.7	49.7	9.1	55.6	0	45.8
Micro 2	20.4	13.8	36.4	2.8	0	0
Small 1	33.8	17.2	50.0	30.6	40.0	16.7
Small 2	16.7	11.7	0	5.6	10.0	29.2
Other	13.4	7.6	4.5	5.6	50.0	8.3
All	87.9	70.1	8.9	17.4	4.0	11.6

References

Baah-Nuakoh, A, F. E. Turkson, K. A. Baah-Nuakoh, and W. Baah-Boateng, (2002). 'Multi-country Study on the Growth and Transformation of Micro and Small Scale Manufacturing Firms in Africa: The Ghana Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

Fafchamps, M (1994). 'Industrial Structure and Microenterprises in Africa' Journal of Development Areas' 29, pp.1-30

IPAR, (2002). 'Multi-country Study on the Growth and Transformation of Micro and Small Scale Manufacturing Firms in Africa: The Kenya Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

McCormick, D. (1993). 'Risk and Firm Growth: The Dilemma of Nairobi's Small Scale Manufacturers.' Discussion Paper No. 291 Institute of Developing Studies, University of Nairobi.

Mead, D. C. (1994). 'The Contribution of Small Enterprises to Employment Growth in Southern and Eastern Africa' Michigan State University. Mimeograph.

Mead, D. C. and C. Liedholm (1998). 'The Dynamics of Micro and Small Scale Enterprises in Developing Countries' World Development 26(1), pp. 61-71.

Moyo, T; T. Mumvuma and S. Sibanda, (2002). 'Multi-country Study on the Growth and Transformation of Micro and Small Scale Manufacturing Firms in Africa: The Zimbabwe Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

Oostendorp, R. (2002). 'Firms and Products Market Characteristics' in Gunning J. W. and R. Oostendorp (eds) Industrial Change in Africa: Zimbabwean Firms Under Structural Adjustment. London, Palgrave.

CHAPTER SIX

Graduation of Firms

In this section, an attempt is made to synthesise the information and analytical results on the graduation of firms. In the process, the movement of firms is traced through different size categories and time. The analysis is restricted to firms for whom there was information on the number of workers at start-up, five years previous to the survey and during the survey time (that is, 2002), with a specific focus on the movement across sizes between start-up and the time of the survey. For this purpose, use is made of firm categorisations developed earlier i.e., micro1 (1-5 workers), micro2 (6-10 workers), small1 (11-29 workers), small2 (30-50 workers) and other (more than 50 workers).

In Ghana, about a third of the firms had not moved into higher size categories since start-up. On the other hand, 26.8% had moved into one higher size category, 28% had moved to two higher size categories, 4.8% to three higher size categories and 5.2% into four higher size categories. More than half of the firms with more than 50 workers at the time of the survey had graduated from micro1 category. The proportion of firms that moved a couple of sizes was greatest among mature firms and firms in the wood and food sectors. Evidence from Kenya revealed that the mean number of workers at start-up and during the time of the survey was 11.5 and 14.78, respectively, so that the average firm size in Kenya was larger during the survey time than at start-up. None of the firms in the Kenyan sample had more than 50 workers at start-up²⁰. Further analysis of the size categories at start-up and survey time revealed that although 73.6% of the Kenyan firms that started in the micro1 category did not graduate, 10.53% graduated from micro1 to micro2. Furthermore, one micro1 firm managed the huge leap to become a 50 plus workers firm. More than 58% of the previously micro1 firms in Ghana however moved to higher size categories. Small1 and small2 categories of firms also graduated. In Kenya, for example, 16.67% of firms that started as small1 firms and 25% of firms that started as small2 firms had had more than 50 workers during the time of the survey. There therefore is evidence of graduation of firms since the start-up.

²⁰ Five years previous to the survey, the mean firm size was 20.6, so that there was general contraction of firms in the last five years.

Making a distinction between firms that moved and firms that did not move to higher size categories between the start-up and the survey time, econometric analysis was used to explore the odds for firm graduation. This was achieved by creating a dummy that assumed a unit value for firms that moved to a higher size category between the start-up and the time of the survey. Since graduation is a dynamic concept, use was made of variables that were unlikely to have changed through time to construct the explanatory set²¹. Graduation therefore was crudely measured as the process of moving from one start-up firm size to a higher one during the lives of the firms, without making any distinctions over different levels of graduation. Since there is little in economic theory to suggest candidate explanatory variables, the models were treated as experimental to allow the data to confirm the efficacy of selected variables in explaining the propensity to graduate.

The results revealed that the age of a firm does not influence graduation in any particular way, and therefore does not count for graduation²². The graduation of firms in Africa therefore does not seem to be a lifecycle phenomenon, but can take place at any age in the life of a firm. For this reason, young firms are just as likely to graduate as old ones²³.

The results from the Kenyan sample revealed that firms founded by current proprietors and to some extent those inherited from relatives are more likely to graduate from one size category to another relative to firms that were either bought or started up otherwise. In Africa, and certainly in Kenya, the way firms are initiated affects prospects for graduation. In particular, firms that were purchased seem poorly placed to graduate. It is not clear why this should be the case, although entrepreneurs who procure on-going concerns probably take time to consolidate before eventually expanding the firms. Founding, inheriting and purchasing firms may also reflect different shades of entrepreneurship that have implications for graduation.

Relative to male-owned enterprises, female-owned firms are less likely to graduate. Although this finding is not particularly strong, it is robust to different model specification²⁴. The finding confirms the existence of limited access to

²¹ Because graduation happens over time, variables that also change with time run the risk of introducing statistical pathologies in the modeling.

²² This part of the synthesis draws from the reports from Kenya and Zimbabwe. The Ghanaian report did not include an econometric analysis of the graduation of firms.

²³ This finding was especially notable in with Kenyan firms where the result was robust to many very many model specifications.

²⁴ The finding is also uniform in Kenya and Zimbabwe where econometrics were used to explore the structure of graduation as a process.

credit by female entrepreneurs and other limitations associated to women entrepreneurship in general. On the whole, female entrepreneurs are more likely to operate informally, use less temporary premises, are less likely to operate regularly, and less likely to access external funding.

Like female-owned firms, those owned by Africans are less likely to graduate than firms owned by members of other races. This observation hints at racial differences in the reasons for going into business, ways in which start-ups are financed, differences in corporate strategies and experiences that translate into the poorer performance for African firms. These results also mimic other findings that suggest that African firms are likely to perform badly on account of lack of focus and dissipation of managerial capability, limited business experience, and poor human capital attributes (Kimuyu, 1999).

Relative to unregistered firms, firms that were registered at the start-up are significantly more likely to graduate. This is true in both Kenya and Zimbabwe. Registration seems to be an epoch in the lifecycle of informal firms and is crucial for firm graduation. This finding leads to the conclusion that informality imposes major penalties on firms with uncertain legal status that reduces access to credit and public services such as electricity, telephone and water, all of which are important for improved performance and graduation.

While the presence of a general manager at the start-up does not seem to count, the presence of a production manager seems crucial for graduation. Firms that hire a production manager right at the start-up show significantly greater propensity to graduate. The management arrangement therefore is a key factor in graduation. Often, proprietors play a double role as owner managers and general managers. When firms take on production managers, specific attention is paid to the production process, the outcome of which is expansion, which can be viewed as a pay-off for the risks associated with releasing the control of operations to hired personnel.

Business heritage on its own does not particularly encourage graduation. On the contrary, firms owned by persons whose grandparents were also in business appear less likely to graduate. This finding is inexplicable, except that entrepreneurship may not always be transferred "inter-generationally" due to potential shifts in personal or family interests and progressive blurring of property rights.

There is evidence of size, sectoral and location differences in the inclination to graduate. Relative to other sizes, micro and small firms are significantly more likely to graduate. Although the inclination to graduate is strong for micro and small firms, it is particularly so for the micro firms. There is more scope for the micro and small firms to graduate than there is for firms that are already

large. This scope is particularly greater for the micro firms²⁵.

The results reveal that there is greater graduation potential for food processing firms than there is for firms in other activities. There are no definite spatial differences in the propensity to graduate. Education however seems to marginally count for graduation, although its impact is particularly sensitive to the number of variables included in the analysis.

Evidently, small manufacturing firms in Africa do graduate from one size category to another during their life time. A significant proportion of firms that starts up as very small graduates to higher size categories. The cross-country comparison shows greater incidence to graduate in Ghana perhaps in response to better macroeconomic out turns than in Kenya and Zimbabwe. Founders seem better able to nurture their firms into graduation than secondary owners who acquire businesses through either inheritance or purchase. Female-owned firms fair relatively badly with regard to graduation as do African owned firms relative to those owned by persons of other races so that the gender and race of proprietors influence the graduation of firms. However, graduation is not lifecycle in nature, since young firms are just as likely to graduate as old ones. The management arrangement also counts, and the owner-manager management mode common among small manufacturers seems to undermine graduation, which becomes more probable with the appointment of production managers. But it is the formalisation of firms through registration that seems particularly efficacious in pushing firms along the path of graduation.

References

Baah-Nuakoh, A., F. E. Turkson, K. A. Baah-Nuakoh, and W. Baah-Boateng, (2002) 'Multi-Country Study on the Growth and Transformation of Micro and Small Scale Manufacturing Firms in Africa: The Ghana Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

IPAR (2002) 'Multi-Country Study on the Growth and Transformation of Micro and Small Scale Manufacturing Firms in Africa: The Kenya Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

Moyo, T., T. Mumvuma and S. Sibanda, (2002). 'Multi-Country Study on the Growth and Transformation of Micro and Small Scale Manufacturing Firms in Africa: The Zimbabwe Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

²⁵ For this part of the analysis, the graduation of the larger firms is blurred by transaction problems. This is because the survey was limited to firms with a maximum of 75 workers.

CHAPTER SEVEN

Growth and Growth spurts of Small Firms

This section explores the incidence and structure of firm growth and then proceeds to examine the evidence and the structure of growth spurts in the three African countries. In all cases, changes in firm-level employment are used to track firm growth. Two measures of growth are used: the likelihood for growth and the actual growth rate. The likelihood of growth is tracked through a dummy that picks a unit value for firms that grew in size, and zero otherwise²⁶. Similar measures are used for growth spurts although in this case extraordinary increases in sales are used as a measure for the magnitude of growth spurts.

Two mean growth rates were computed, one using both negative and positive growth rates, and another using only firms that recorded positive growth rates. Although tests of the significance of the difference in the mean annual growth rates were not carried out, the analysis shows considerable variations in the mean rate of firm growth that are structured around initial conditions related to entrepreneurial and firm attributes. The mean annual growth rates of the firms were highest for firms founded by current proprietors and lowest for firms that were purchased. Interacting firm growth rates and ownership structure shows that firms under joint local and foreign ownership grew fastest followed by those that are private and local.

That aside, a significant proportion of firms in the three countries has grown since start-up so that the incidence of growth is high. The average masks important differences in the growth prospects across locations, sectors, the gender of proprietor, method of founding, and the ownership structure.

To explore the structure of firm growth, two econometric models were estimated for each of the three countries, one for the likelihood of growth and the other for annual growth rates. Considering the multiplicity of variables that are candidates for inclusion in the models, the search for parsimony precipitated numerous experimental results that formed part of the separate

²⁶ For purposes of this analysis, the growth rate is defined as $r = (\log \text{size}_t - \log \text{size}_0) / \text{age}$ where size_0 is firm size at start-up, size_t is firm size at the time of the survey and age is the age of the firm. The growth rate is therefore compounded.

country reports. The main findings of the exploration of the odds for and the rate of firm growth are summarised in Table 7.1²⁷.

The results indicate that the age of a firm has different impacts on firm growth. Specifically, the age of a firm has a negative impact on the growth rate of firms in Ghana, so that old firms grow at a slower rate, if at all, than young ones. The age of a firm however has no effect on the likelihood for Ghanaian firms to grow so that old firms in Ghana are just as likely to grow as the young ones. The impact of firm age on the growth prospects for small manufacturing firms in Kenya is slightly different from that of Ghanaian firms, in the sense that the age of a firm impacts negatively on not only the growth rate of firms but also the odds for the growth of firms. Not only are old small Kenyan manufacturing firms less likely to grow, but also grow, when they do, at a slower rate than the relatively young firms. The situation is fundamentally different in Zimbabwe, where the age of a firm has a direct positive impact on the growth rate of small manufacturing firms. Unlike Ghana and Kenya where the growth rate of firms levels up with age, old small manufacturing firms in Zimbabwe grow faster with the passage of time. The findings in Ghana and Kenya confirm, while the findings in Zimbabwe challenge Gibrat's law about the negative correlation between a firm's growth rate and age. We conclude that the actual relationship between the age of a firm and its growth rate is defined by the peculiarities of the specific contexts that are threshold rather than universal in nature²⁸.

The results further show that in Ghana, the size of a firm exerts a strong, negative impact on the growth rate of the small manufacturing firms. This outcome was also obtained for both Kenya and Zimbabwe. Thus, the relatively large manufacturing firms in the three countries grow at a slower rate than those that are relatively small manufacturing firms. Nevertheless, there are observable cross-country differences in the sense that while this inverse relationship is only

²⁷ There were some differences in the methodological approaches used for different country analyses. While all country teams used OLS estimation for the growth rates, the results for the odds for firm growth in Ghana and Kenya were probit-based while those for Zimbabwe were logit-based. Although these two methodologies are based on different assumptions about the structure of the error terms, they generate results that are easily comparable. In the search for parsimonious specification, the country teams included varying assortments of variables. There are therefore many variables that were part of the country level analysis that are excluded from the summary presented in Table 7.1.

²⁸ Although the results are largely robust to specifications, the range of variables included in some of the country models may have not have been fully specified, leading to these contradictory results. A further problem in these analyses that mop up dynamic issues tend to suffer from joint determination problems.

true of the growth rate in Ghana and Zimbabwe, it holds for both the growth rate and growth odds in Kenya. The firm size – firm growth nexus therefore is more efficacious in Kenya. This finding is in line with the theory of human development and general intuition since younger people grow faster than older ones. The finding also indicates that when circumstances change in a way that positively shocks firms and drives them in the direction of a new growth path later in their lives, the firms may no longer be identified as the same as their predecessors.

In comparison with informal firms, firms that are registered at the start-up have better growth prospects. The impact of registration at the start-up on growth odds is positive in Ghana and Kenya and for the growth rate in Zimbabwe. Firms that are registered at the start-up therefore are not only more likely to grow but also grow faster. Registration puts firms on a firmer legal footing that in turn permits wider market outreach. Registered firms also suffer less harassment and are less sensitive to the growth generated obtrusion. On the other hand, informal firms suffer from reduced access to public services, are less able to attract supplier credit and other financial services, and may steer clear from expansion and growth to obviate attraction from state agents and the harassment that often accompanies such attention. Non-registration therefore is costly for the growth of firms.

Relative to firms owned by other races, those owned by Africans are less able to grow. Whenever they grow, this is usually at a slower rate than firms owned by persons of other races. This is true in both Ghana and Kenya²⁹. It is unclear why African ownership should imply poor firm growth prospects, though African firms are generally less capitalised and are operated by persons with relatively limited business experience than firms owned by persons of other races. Many African small manufacturers are owner-managed so that their growth is undermined by limited management capability, thus confirming the Penrose effect. They are also operated by persons with relatively less business heritage. Often, African entrepreneurs are the first-generation business persons in their families and hence lack the cumulative benefits of intergenerational business experiences that propel businesses owned by persons from other races. In addition, the majority of African manufacturing activities are single-person operations that are supply driven and dominate those driven by lack of alternative occupations, for reasons that undermine the growth prospects of their firms. Other studies have demonstrated that relative to entrepreneurs from other races, African entrepreneurs are less educated, younger and substantially less experienced, straddle more between business and formal

²⁹ The results of the African ownership in Zimbabwe are inconclusive. They are therefore excluded from this part of the analysis.

employment, and are often less specialised (Kimuyu, 1999). This context reduces the growth prospects of African firms.

The results suggest that after controlling for the individual impacts of an assortment of other variables relevant to firm growth, experience counts only marginally in Ghana but significantly in growth odds for firms in Kenya and somewhat for the growth rate of firms in Zimbabwe. In particular, while an entrepreneur's experience measured as years spent by a proprietor as either an owner of a similar business or an employee of a firm in a similar type of operation has only a weak effect on the odds for and actual growth rate of firms in Ghana, but has a strong positive effect on the likelihood for firm growth in Kenya and a weak but positive impact on the growth rate of firms in Zimbabwe. Overall, therefore, experience provides leverage for firm growth in Africa. We conclude that some of the firms started by persons retrenched from manufacturing activities where there was opportunity to accumulate appropriate experience will grow to become large industrial concerns.

Heritage shows mixed impacts. Firms operated by persons whose grandparents were in business in Ghana grow at a significantly slower rate than those operated by first-generation business persons, indicating that having grandparents in business has a negative effect on the growth performance of firms. Kenyan firms that were inherited are somewhat more likely to grow relative to those either founded by current proprietors or those purchased from other entrepreneurs. These findings suggest a critical difference between inheriting a firm and having a business heritage. But it is unclear why firms owned by persons whose grandparents were in business should show poor growth prospects, as the results from Ghana suggest, except that entrepreneurs with deep business heritage own older operations that have already stabilised and are less likely to grow. Such persons could also be at the management end of extended family manufacturing activities where the challenge to excel would have been eroded by unclear property rights defined around a large family. In the circumstance, inheritance probably clarifies a firm's property rights, paving the way for improved performance that in turn translates into firm growth.

Strangely, entrepreneurs' education does not seem to count for either the odds for growth or the actual growth rate recorded by firms in the three counties. Since firm growth is an indicator of the performance of firms, this result speaks volumes about the relevance of the formal education offered in Africa for business and points at the need for skills more directly applicable in business operations. The result also leads to the conclusion that it is perhaps innate abilities such as those captured in reasoning ability scores, rather than years of schooling, that count in the business world. This is especially possible where a significant proportion of business interactions are limited to acquaintances,

but is far fetched when operations are information-intensive and through anonymous exchanges.

There is evidence of a gender dimension in the odds for and magnitude of firm growth. Usually, gender differences in firm growth tend to favour male-owned enterprises (Mead and Liedholm, 1998). This is because female entrepreneurs concentrate on slow growing activities, suffer from the dual role of domestic and productive activities and have differing business objectives. Female entrepreneurs are also more risk averse due to their responsibility in maintaining the welfare and overall survival of households. The findings from this analysis, though weak, confirm these intuitions.

The age of the proprietor is a further variable that has a bearing on firm growth. Data from Ghana and Kenya revealed that firm growth is strongly inversely related to a proprietor's age. This is somewhat counter-intuitive since age and experience are somewhat complementary. Older proprietors would bring their experience into the operations of a firm to ensure its growth, just like years of experience as owner and employee do. Since the measurement of firm growth is based on employment size, it is possible that some proprietors, especially older ones, favour capital-intensive methods of production and emphasise quality rather than quantity of employment.

What about growth spurts? To answer this question, we use responses to a question about whether the firm had experienced extraordinarily rapid increases in production and sales, and the size in percentage terms of such increases. Using probit/logit analysis to explain the odds for the spurts and ordinary least squares for the magnitude of the spurts reveal that, like ordinary firm growth, the age of a firm is an important determinant of sales spurts. In particular, the age of firms in Ghana and Kenya impacts positively on both odds for and magnitude of sales' spurts (Table 7.2). In Zimbabwe, the impact of firm age on odds for a sales' spurt is also positive and decisive. Its impact on the magnitude of the spurts however is weak. In any case, the odds for and the magnitude of sales' spurts generally increase with the age of a firm. In this connection, older firms are more likely to experience sales' spurts and enjoy correspondingly larger spurts than young ones. Spurts, therefore, are lifecycle phenomena. This finding challenges theoretical arguments that perceive spurts as random events that can occur at any point in the life of a firm. Firms thus have to live long enough to experience spurts.

Registration has the same effect on growth spurts as it has on firm growth. Its effect on odds for experiencing the spurts is positive and strong in the three countries. It also impacts positively on the magnitude of sales' spurts in Kenya and Zimbabwe. In Ghana, however, registration does not seem to count for the magnitude of sales' spurts. Nevertheless, these results suggest that firms

that are registered are more likely to experience sales' spurts, and that registration and the magnitude of the spurts are positively correlated. Registration consequently puts firms on a threshold where sales' spurts are not only more likely but also will be of greater magnitude than for unregistered firms.

The results show that the impact of business heritage on sales' spurts is somewhat mixed. In Ghana, for example, business heritage has positive effect on the likelihood that firms will experience a sales spurt, but is immaterial for the actual magnitude of the actual spurts. In Kenya, the results show that heritage impacts positively on both odds for and the magnitude of the sales' spurts. Heritage however has a positive but weak effect on both the likelihood of experiencing a sales spurt and the actual magnitude of the actual spurt. The Kenyan results probably reflect the domination of the Asian community in the manufacturing sector, for Asian enterprises are often inter-generational so that business skills are perfected through specialisation and passed on from one generation to another. One outcome of this heritage is better performance, including episodes of sizeable sales' spurts. Discontinuities that are common among African-owned enterprises reduce the prospects for increases in performance, including the likelihood of experiencing growth spurts.

There is evidence of a spatial dimension in sales' spurts. Relative to being located elsewhere in Ghana, firms located in Kumasi are more likely to experience sales' spurts. This is also true of Kenyan firms located in Eldoret relative to those located elsewhere in Kenya. The results do not reveal any spatial differences in Zimbabwe. We conclude that in Ghana and Kenya, the relative impact of being located in different cities probably reflects specific trends in urban expansion. In Kenya, for example, Eldoret has been the most rapidly expanding urban centre in recent years, as evidenced by the rapid increase in population, the establishment of a public university and an airport and the attraction of businesses. These developments are likely to have triggered expansion in existing businesses and, probably, account for the higher incidence of sales' spurts.

The human capital attributes of the entrepreneurs exert impact on sales' spurts. For example, the results show that a proprietor's educational achievement increases the likelihood for experiencing a sales' spurt in the three countries, such effect being particularly strong in Ghana. The level of a proprietor's education however does not seem to count for the actual magnitude of the spurts except in Kenya. Even here, the effect of educational attainment on the magnitude of the spurts is weak. In Zimbabwe, the relationship between a proprietor's educational attainment and the magnitude of sales' spurts is

negative, albeit weak. This is counter-intuitive. The balance of these results is that entrepreneurs' educational attainment impacts positively on sales' spurts.

African ownership does not seem to count except in Kenya, where the racial differences are particularly dramatic. Thus African-owned small manufacturing firms in Kenya are significantly more prone to sales' spurts. The actual magnitude of the sales' spurts is also marginally greater for firms owned by Africans. These results are somewhat baffling since Asian firms in Kenya generally show better trading results. In recent years, however, shrinking economic fortunes may have forced Asian business people who have always

Table 7.1: Direction and Strength of Factors Relevant to the Odds for and Rates of Firm Growth

Factors	Direction and strength of impacts		
	Ghana	Kenya	Zimbabwe
Age of firm	Negative and strong for growth rate, not important for the growth odds.	Negative and strong for both odds and rate.	Positive and strong for the growth rate only.
Registration status	Positive and strong for the odds, irrelevant for the rate.	Positive and strong for the odds.	Positive and very strong for both rate and odds.
Firm size	Negative and strong for both rate and odds.	Negative and strong for the rate and odds.	Negative and strong for rate only.
Inherited/ heritage	Parents in business have a negative and strong effect on rate only.	Having been inherited rather than founded or bought has positive and strong for the odds.	
Owner's experience	Weak positive impact on both the rate and the odds for firm growth.	Positive and strong for the odds, irrelevant for the rate.	Positive but weak for the rate, irrelevant for the odds.
African owner	Negative and mild for the odds, irrelevant for the rate.	Negative but weak for both rate and odds magnitude.	
Male owner	Negative and weak, for the odds only	Not important for the odds and the rate.	No impact on either the odds or the rate
Proprietor's age	Negative and strong for the odds and rate.	Negative and strong for the odds and rate.	
Proprietor's educational attainment	Positive but weak for the odds only.	No effect on either the odds or the rate.	No impact on either the odds or the rate.

Note: A blank means that the specific variable was not included in the specific country's estimations.

been footloose, to shift their business interests elsewhere.

Gender does not seem to count for sales' spurts in Ghana. Male-owned enterprises in Kenya and to some extent in Zimbabwe are more likely to experience sales' spurts than firms owned by females. Male-owned small manufacturing firms in the two countries also enjoy greater sales' spurts than female-owned firms. The explanation for the gender differences in the spurts are the same as those for the growth of firms: female entrepreneurs concentrate on activities that only grow slowly, are torn between their role as home makers

Table 7.2: Direction and Strength of Variables Relevant to the Odds for and Magnitude of Growth Spurts of Firms

Factors	Direction and strength of impact		
	Ghana	Kenya	Zimbabwe
Firm age	Positive and strong for both the odds and magnitude	Positive and strong for both odds and magnitude	Positive and strong for the odds but weak for the magnitude
Registration status	Positive and strong for the odds, doesn't count for the magnitude.	Positive and strong for both the odds and magnitude.	Positive and weak for both the odds and magnitude.
Inherited/heritage	Positive and strong for the odds, weak for the magnitude.	Positive and strong for the odds.	
Firm location	Being located in Kumasi has a positive and strong for the odds.	Being located in Eldoret has a positive but weak effect on the odds.	
Owner's education	Positive and strong effect for the odds, irrelevant for the magnitude.	Positive but weak for both the odds and magnitude.	Positive but weak for the odds, negative and weak for the magnitude.
African owner		Positive and strong for the odds but weak for the magnitude.	
Male owner	No discernible effect	Negative and strong for both the odds and magnitude.	Positive but weak for both the odds and magnitude.

Note: A blank means that the specific variable was not included in the specific country's estimations.

and participants in productive activities, have limited access to credit and suffer poorer property rights relative to their male counterparts. Further more, female entrepreneurs are generally more risk averse due to their responsibility of maintaining the welfare and survival of households. These attributes undermine the performance of women enterprises including a failure to experience the same progressive dynamics as those enjoyed by male proprietors.

To summarise, Africa's small manufacturing enterprises graduate from one size category to another and systematically grow and experience growth spurts. Odds for and the rate of such growth and its spurts vary in accordance with firm age, firm size, registration status, business heritage, location, gender, age and, to some extent, the race of a proprietor. There also is an assortment of other firm's and proprietor attributes that shape the growth and its spurts. It is therefore not true that small enterprises in Africa do not grow as asserted in the literature. Since the evidence assembled in this report relates to micro and small scale manufacturing activities, they cannot be generalised to include general commerce for which the literature may hold.

Firms owned by persons with vocational skills and business experience gained from years of exposure to similar enterprises, enabling them to understand different aspects of business, production processes and markets before start-up, should generally show greater inclination to grow (Mead and Liedholm, 1998). Firms owned by persons able to control capital costs, pay attention to specific requirements of markets in which they sell, establish systems that provide workers with incentives for productivity and maintenance of quality and are ready to take risks and develop contractual relationships with workers are also more likely to grow. Ultimately, the growth of firms thrives in deep knowledge of markets of interest to a firm, as evidenced by relationships between entrepreneurs and key market players. In addition, the ability to effectively use an existing labour force and control operational costs makes the growth of firms more likely (Mead, Mukwenha, and Reed, 1994). Factors internal to a firm, rather than external ones, count for firm growth. These factors include ability and willingness to take risks such as those related to firm growth.

Firms grow when their owners/managers value expansion, seize opportunities and overcome growth obstacles. When growth is not perceived as beneficial and barriers are not surmountable, firms tend to stagnate (McCormick, 1993). Growth itself is an outcome of positive shocks in the market. The churning flows arising from job allocation and re-allocation relate to the evolution of optimal personnel and wage policies that become better with firm growth and age, raising possibilities of an inverse relationship between firm size and age such as that found in this report (Burgess, Lane, and Stevens, 2000).

This analysis has demonstrated the importance of registration as a lever for firm growth and growth spurts and has shown that while growth spurts take place over time, young and small firms are more likely to grow and enjoy faster growth rates than old firms. Reducing registration-related red tape and costs to encourage formalisation of existing informal small manufacturing firms and promoting the establishment of new firms therefore should be part of Africa's industrial expansion and growth strategy.

References

Baah-Nuakoh, A., F. E. Turkson, K. A. Baah-Nuakoh, and W. Baah-Boateng, (2002). 'Multi-country Study on the Growth and Transformation of Micro and Small Scale Manufacturing Firms in Africa: The Ghana Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

IPAR, (2002). 'Multi-country Study on the Growth and Transformation of Micro and Small Scale Manufacturing Firms in Africa: The Kenya Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

Kimuyu, P.K. (1999) 'The African Factor in Enterprise Structure and Performance in Kenya'. Discussion Paper No. 019/99. Institute of Policy Analysis and Research, Nairobi.

Mead, D. C., H. O. Mukwenha and L. Reed, (1994). 'Growth and Transformation among Small Enterprises in Zimbabwe'. Mimeograph.

Mead, D. C. and C. Liedholm, (1998). 'The Dynamics of Micro and Small Enterprises in Developing Countries' *World Development* 26(1), pp.61-74.

Moyo, T., T. Mumvuma and S. Sibanda, (2002). 'Multi-country Study on the Growth and Transformation of Micro and Small Scale Manufacturing Firms in Africa: The Zimbabwe Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

CHAPTER EIGHT

Transformation of Firms

In this chapter, attention is shifted to the main thrust of this piece of work, which is to understand the structure of the process of firm transformation. Since transformation is multifaceted, we begin by exploring the incidence of different potential indicators of transformation such as formalization, changes in business pattern, management style and technological adjustment. Two indicators were used to track formalisation: registration of the firms with registrars of companies and progress towards keeping books of accounts. Changes in business patterns were tracked through an assortment of variables such as changes in number of months in a year that a business operated, changes in the number of operational shifts, changes in the range of products and number of production plants, and interest in the external markets. Two variables were of value in measuring changes in management style: replacing owner-management with paid management and employment of general and production managers. Dummies and categorical variables were then created to track the incidence and, in the Kenyan case, the depth of transformation. The composite variables were used to further explore the structure of firm transformation. In the process, consideration was given on the effects of enterprise variables, entrepreneurial human capital effects, the influence of technology acquisition and equipment upgrading, and proxies for management capability in the transformation of firms.

As argued in the conceptual framework, each of these dynamics pushes firms to different institutional thresholds with fundamentally different rules of the game. Institutional implications of these changes however are asymmetric since some of the dynamics have deeper effects than others. It is contended that fundamental transformation is the outcome of a judicious combination of these firm-level dynamics.

There were cross-country variations in the "operationalisation" of the transformation concept. In Ghana, a firm was viewed as having been transformed if it not only recorded graduation after start-up but also underwent at least three other changes, that is, formalized, changed management style, made some technological adjustment, changed business pattern or made a debut in the export market. In Kenya, a firm was considered to have become transformed if it graduated, formalized operations, changed management style or upgraded its equipment. In Zimbabwe, the criterion for transformation was more restrictive

as it included a combination of graduation, upgrading of equipment, and formalization of operations.

The analysis showed that more than a half of all the firms in the three countries went through some transformation since the start-up, indicating that transformation of these small manufacturing firms in Africa is common. Adjusting for "operationalisation" differences, and using the more restrictive three-sided criteria (formalization, graduation and equipment upgrading), revealed that 41% of the firms in Ghana were transformed, the corresponding figures for Kenya and Zimbabwe being 18.6% and 12.3%, respectively. Thus, although the transformation of small manufacturing enterprises is evident in Africa, the transformation is not uniform across countries. It is deeper and more pervasive in some countries than in others. It is significant that the transformation of firms in Ghana, which has enjoyed better economic performance in the recent past, is more widespread and deeper, so that general macroeconomic performance leverages the transformation of small manufacturing firms such as those found in Africa.

Further exploration of the structure of the transformation of firms was pursued using econometric methodology. In each country, a dummy was created and assigned a value of one for firms meeting the criteria for transformation and zero otherwise. In addition, an ordered response variable that assumed a zero value for firms that did not meet any of the criteria, one for firms that met only one criterion, two for firms that met two criteria and three for firms that met three criteria was used. Probit/logit and ordered probit econometric experiments were carried out in the search for parsimonious models for explaining the likelihood for and depth of the transformation of firms.

The results, presented in summary form in Table 8.1, indicate that the age of a firm is particularly important in the transformation process. The proprietor's age shows mixed results: negative in Ghana but positive in Kenya. There were no a priori expectations on the impact of this variable. Firm age may represent fixed habits and/or resistance to changes that result from enterprise transformation. On the other hand, age may proxy for experience that should translate into entrepreneurial alertness needed in sensing new business breaks and exploiting them, so that transformation becomes theoretically more probable³⁰. The net effect of an owner's age should be determined by the relative strengths of these two opposing forces. That net then becomes contextual, as the results from Ghana and Kenya suggest.

³⁰ However, the estimations controlled for experience gained either in running similar businesses or working as an employee of a firm having similar operations.

Evidence from Kenya and Zimbabwe suggests that firms owned by men are more likely to transform and, in the case of Kenya, enjoy deeper transformation than those owned by women. Thus, firms owned by men are not only more likely to graduate and grow as seen earlier, they are also more likely to transform. It is perhaps in the more complex process of transformation where all the factors that put women business persons at a disadvantage intersect: more limited access to capital and credit, less able to operate regularly, less able to register and formalize operations, less able to upgrade equipment and technology, and less able to respond to business opportunities due to enslavement by household chores.

Like women-owned enterprises, the results show that firms owned by Africans are significantly less likely to transform in Ghana and to some extent in Kenya, relative to firms owned by persons from other races. This result mirrors other results that have demonstrated disadvantages that African business persons have to overcome, namely, lower education and less ability to process business-relevant information, less experience, more diversified and/or less specialized, wrong reason for going into business, and straddling more between paid employment and private business. African-owned businesses therefore tend to show relatively poor performance on these counts. That poor performance is epitomized by this lower propensity of African owned businesses to transform.

The results are also unequivocal about the fact that the older a firm gets, the more likely that it eventually becomes transformed. Furthermore, older firms in Kenya are more likely to enjoy deeper transformation than young ones. Although small manufacturing firms in Africa transform, it would seem that this does not happen overnight. Firms have to survive beyond their formative years in order for them to get transformed and latch on to more progressive institutional thresholds. Strategies that increase the life expectancy of small manufacturing firms in Africa may hold the key for industrial transformation in Africa.

The impact of a proprietor's formal education, in years, on the transformation of firms is positive in Ghana and Zimbabwe, but negative in Kenya. This is to say that while firms owned by persons with many years of education are more likely to transform in Ghana and Zimbabwe, firms in Kenya are less likely to transform. The Kenyan results are perverse and probably reflect the fact that a critical mass of educated Kenyans presently in business was either retrenched or retired from formal sector jobs and is in manufacturing for lack of something else to do. A shrinking economy and public sector reforms in Kenya offer explanations for this state of affairs.

Ownership of technical skills by proprietors has an inherently positive effect

Table 8.1: The Direction and Strength of the Impact of Factors Shaping the Odds for the Transformation of Firms

Variables	Direction and strength of impact		
	Ghana	Kenya	Zimbabwe
Age of owner	Negative and strong on the odds for transformation	Positive and strong on the odds and depth of transformation	
Gender of owner (male=1)		Positive and reasonably strong on the odds and depth of transformation	Positive and strong on the odds for transformation
Race of owner (African = 1)	Negative and strong on the odds for transformation	Negative but weak on the odds and depth of transformation	
Owner's years of formal education	Positive and somewhat strong on the odds for transformation	Negative and somewhat strong on the odds and depth of transformation	Positive and strong on the odds for transformation
Owner has technical education	Positive and reasonably strong on the odds for transformation.	Positive and reasonably strong for both the odds and depth of transformation	Positive and strong for the odds for transformation
Owner's years of experience	Positive and strong on the odds for transformation.		Positive and somewhat strong on the odds for transformation
Age of firm	Positive and strong for the odds for firm transformation	Positive and strong for both the odds and depth of transformation	Positive and strong for the odds for enterprise transformation.

Note: The results of the ordered probit estimations for Kenya are interpreted as tracking the depth of transformation. Other country results were based on either probit (Ghana and Kenya) or logit estimations³¹. The models controlled for many other variables not included in this table for reasons of comparability. For the synthesis, we are also more interested in the initial conditions to obviate statistical pathologies such as endogeneity.

³¹ As argued elsewhere in this report, logit and probit formulations are quite similar but are based on different assumptions about the structure of the error terms. Furthermore, the logistic distribution has slightly flatter tail.

on the transformation of manufacturing firms. This is expected, since skills are critical in operations of manufacturing plants. The skills are a particular boon in the sourcing and application of technology as well in increasing technical efficiency or best practices. In addition, like technical education, years of experience gained from either employment in a firm within the same sector or in operating a similar business positively influence the likelihood of firm transformation, indicating that firms owned by experienced persons are more likely to transform than firms whose owners are inexperienced. There is therefore a learning-by-doing factor in the transformation of small manufacturing firms in Africa.

To conclude, small manufacturing firms in Africa transform, so that they move from one institutional threshold to another. Manufacturing firms in different countries in the continent however neither share uniform transformations nor are the depths of such transformations symmetric. A myriad of factors shapes the structure and depth of such transformation of firms. Some of these factors are entrepreneur-specific while others are firm-specific. Among the latter, the age of a firm is a key factor that increases the odds for the transformation of firms in all countries. This being the case, we have argued that increasing the life expectancy of small manufacturing firms probably holds the key for industrial transformation in Africa. Further, while general education is worthless from the perspective of a firm's transformation, technical skills drive firm transformation as does experience gained through either operating similar activities or working for firms in the same line of business. Encouraging technical training therefore would be boon for industrial transformation in the continent.

References

Baah-Nuakoh, A., F. E. Turkson, K. A. Baah-Nuakoh, and W. Baah-Boateng, (2002). 'Multi-country Study on the Growth and Transformation of Small Manufacturing Firms in Africa: The Ghana Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

IPAR (2002). 'Multi-country Study on the Growth and Transformation of Small Manufacturing Firms in Africa: The Kenya Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

Moyo, T., T. Mumvuma and S. Sibanda, (2002). 'Multi-country Study on the Growth and Transformation of Small Manufacturing Firms in Africa: The Zimbabwe Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

CHAPTER NINE

Summary

This publication synthesizes reports from Ghana, Kenya, and Zimbabwe. These countries were part of a multi-country study on enterprise growth and transformation, and were selected because the micro and small scale sectors in each of the countries had been previously surveyed. The study settled for small manufacturing firms to control for heterogeneity across activities and to increase the likelihood of picking up meaningful dynamics. A common research instrument was used to collect information from each participating country. Stratified sampling included a mixture of sector and location considerations. The sectors included food processing, wood-working, textile and garments and metal working, which account for the lion's share of manufacturing activities in Africa.

There were country-level peculiarities in the choice of the sampling frame. In Kenya, the sampling frame was the September 2000 Central Bureau of Statistics checklist of industrial firms. In Zimbabwe, the sample frame was developed from a mini-census, with an enumeration process targeted cluster with a high concentration of manufacturing activities in the selected sectors. Similarly, the sampling frame in Ghana was constructed through a census that included a comprehensive listing of business enterprises in the sectors of interest. In the three cases, the target sample was 200 micro and small scale enterprises.

Structured multi-module questionnaires were used to collect quantitative information and case studies used to flesh up findings from the survey data. Extensive use was made of descriptive analysis dominated by frequency tables. These were complemented by econometric analysis that exploited the myriad of variables that represented information on the initial condition of firms.

The size distribution of small manufacturing firms in Africa is skewed to the left, confirming other findings that have demonstrated that the size distribution of industrial firms tends to have many small firms and few large ones. This is a consequence of the structure of the local capital market that forces indigenous firms to start small and grow horizontally on the one hand and foreign direct investments and capital intensive technologies that allow some firms, usually foreign, to start and remain large on the other. There is evidence of dualism in Africa's small scale manufacturing, with indigenous entrepreneurs typically

owning small firms and their minority European and Asian counterparts owning medium-sized and large firms. The one-worker enterprises are common. These self-employment activities are often operated informally by poorly educated, African female proprietors that dominate the early stages of industrialisation. Human capital attributes such as education, race and gender embody the ability to tag-on to financial and managerial resources and ultimately determine the size of a firm.

Small manufacturing firms in Africa graduate from one size category to another, indicating that a significant proportion of the one-person firms in due course graduate to higher size categories. The incidence of graduation is greater in Ghana where macroeconomic out turns in the recent past have been better than those in Kenya and Zimbabwe. Firms operated by founders are more likely to graduate relative to those either inherited or purchased. Female-owned firms and those owned by indigenous Africans, however, are less likely to graduate, though young firms are just as likely to graduate as old ones while owner-managed firms are less likely to graduate than those under paid management. Further, firm graduation is more probable when firms are formalised and production managers are appointed.

Africa's small manufacturing firms not only graduate but also grow and experience growth spurts. The odds for and the rate of firm growth and its spurts are shaped by the ages of firms and their initial size, registration status, location and entrepreneurs' gender, age and race. An assortment of other firm and proprietor attributes also shape the growth of firms and their spurts. It is therefore not true that these enterprises do not grow.

Firms owned by persons with vocational skills, business experience and markets, before start-up, should generally show greater inclination to grow. Ultimately, the growth of firms thrives in deep knowledge of markets of interest to a firm, as evidenced by relationships between entrepreneurs and key market players. These and other factors internal to a firm count for growth. For example, firm owners/managers must value expansion, seize opportunities and overcome growth obstacles.

Like graduation, registration provides fulcrums for firm growth. While growth spurts take place over time and are lifecycle on that score, young and smaller firms are generally more likely to grow than old ones. Reduction of registration-related red tape and costs to encourage formalisation of informal small manufacturing firms and promoting the establishment of new firms should be part of Africa's industrial expansion and growth strategy.

Small manufacturing firms in Africa transform, moving from one institutional threshold to another. The transformation is neither uniform nor its depths

symmetric across countries. A myriad of factors shape the structure and depth of the transformation of firms. The age of a firm is a key factor that increases the odds for the transformation of firms, so that increasing the life expectancy of small manufacturing firms will be critical for industrial transformation in Africa.

While general education is worthless from a firm transformation perspective, technical skills drive the process as does experience gained through either operating similar activities or working for firms in the same line of business. Hence, technical training remains an important strategy for industrial transformation in the continent.

What else do these findings suggest about the way forward for the micro and small manufacturing firms in Africa? To increase the absorptive capacity of small enterprises, specific institutional arrangements such as the "umbrella strategy" practiced in Malaysia, the "foster father" plan in Indonesia and the "local industry upgrading program" in Singapore can be encouraged. The umbrella concept is a means of linking micro and small scale enterprises to large marketing intermediaries. A large company with financial resources and expertise helps these enterprises in areas such as production, design, quality control, and marketing. With the help of the intermediaries the firms are able to participate in government supply contracts. The umbrella firm gets a commission as a marketing agent.

Considering the importance of formalization of firms in the growth and transformation process, registration of businesses could be made easier by increasing access of micro firms to registrars of companies and thus reducing exposure to registration related red tape while paying attention to local peculiarities. Given the low levels of literacy, part of the simplification can be achieved by making the registration language as local as possible. Reduction in registration-related costs will encourage small manufacturing firms to move away from informality and release micro firms that dominate the small manufacturing sector from the stranglehold of informality, giving them an opportunity to exploit their full potential and optimise their contribution to development.

An aspect of informality is a failure to keep records of accounts. The failure is particularly evident in the micro scale manufacturing firms that depend on mental retention of information on their performance and often confuse revenues with profits. In the interest of the growth and transformation of these enterprises, educational and training programmes are needed that underscore the importance of businesses records in planning and tracking business performance. Such programmes would specifically target the smallest of the small manufacturing firms that appear less inclined to keep books of accounts.

The results of the analysis of firm dynamics have shown that firms often need to live long enough so as to eventually get an opportunity to grow, graduate and respond to changing market trends by transforming. In an environment where life expectancy of firms is short, such as that in which many of micro and small manufacturing firms in Africa operate, firms miss the opportunity to benefit from these lifecycle dynamics. It is important in this regard for policy to seek to reduce non-commercial risks through an improvement of opportunities for effective conflict resolution and enforcement of business contracts. This will unleash the graduation, growth and transformation potential by promoting continuity and increasing the life expectancy of small manufacturing firms. Baby firms that dominate the very small segment of Africa's small manufacturing sector and that often fail to survive the formative years should be specific objects of such a policy.

Sectors that show significant growth, graduation and transformation potential are sectors that draw manufacturing feed-stock from Africa's natural resource base. An important policy consideration arising from this state of affairs is to firm-up links between resources/agricultural and manufacturing activities to further exploit the growth spurt potential of wood and food processing sectors. Improvements in the general rural-urban communication, particularly through improved rural access roads, are important steps in that direction.

While formal education performs poorly on firm growth and transformation, indicating that African formal school curricula do not prepare students for business, technical skills facilitate enterprise growth and transformation. It therefore can be concluded that while more educational institutions remain desirable in expanding the pool of educated persons from which the business sector draws, the development of Africa's human capital needs tilting towards building skills appropriate for the business world.

A few strands of this study invite further investigation. Since the transformation of enterprises is multi-dimensional, additional information is needed on the productivity and firm performance consequences of different aspects of transformation. For example, it would be important to know whether upgrading productive equipment and moving from owner management to paid management have similar productivity dividends, or whether there is an implied pecking order that defines progression along the enterprise transformation path. This information is needed to sharpen the targeting of policies aimed at the promotion of enterprises. The additional analysis will be useful in improving the index for measuring the depth of transformation by suggesting a refinement of the weighting of different dimensions of transformation.

Africa's industrial property markets are such that manufacturers, whatever

their size, eventually gravitated towards location in own premises, incurring heavy sunk costs. The sunk costs make firms more obtrusive and less footloose, undermining their ability to short circuit unfriendly social infrastructure such as red tape and corruption. Further research is needed to explore the structure of industrial property markets as a guide to policies that reduce the stranglehold of sunk costs to promote further growth and transformation of firms.

We do not know enough about what seemingly latent variables such as gender, race and location represent in the context of micro and small scale manufacturing in Africa. Further research is needed to sustain the unpacking of these composite variables as part of the process of increasing the stock of knowledge on firm dynamics.

There are methodological difficulties in using cross-sectional survey data to track firm dynamics. The dynamics are best understood when it is possible to follow firms through the entirety of their lifecycles. This is not possible in the absence of longitudinal information such as that generated through surveying the same firms over long periods of time. Research on micro and small scale manufacturing firms in Africa should begin to move in that direction for a better understanding of the structure of the dynamics that characterise the lifecycle of the firms.

References

Baah-Nuakoh, A., F. E. Turkson, K. A. Baah-Nuakoh, and W. Baah-Boateng, (2002). 'Multi-country Study on the Growth and Transformation of Micro and Small Scale Manufacturing Firms in Africa: The Ghana Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

IPAR, (2002). 'Multi-country Study on the Growth and Transformation of Micro and Small Scale Manufacturing Firms in Africa: The Kenya Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

Mead D.C and C. Liedholm. (1998). 'The Dynamics of Micro and Small Enterprises in Developing Countries' *World Development* 26(1), pp. 61-74

McPherson, M. A. (1996). 'Growth of Micro and Small enterprises in Southern Africa' *Journal of Development Economics* 48, pp.253-277

Moyo, T., T. Mumvuma and S. Sibanda, (2002). 'Multi-country Study on the Growth and Transformation of Micro and Small Scale Manufacturing Firms in Africa: The Zimbabwe Case'. Final Report Submitted to the African Centre for Economic Growth, Nairobi.

Small enterprise literature has thrown doubt on the ability of micro and small enterprises to grow and graduate. Those started small remain small, and those that are currently large were started large. Very little meaningful transformation occurs among Africa's small firms. Since upwards of 90% of private enterprises in Africa lie in the micro category, a growth strategy for Africa must get these micro-level firms to develop and transform into categories where they are able to adopt efficient production technologies for effective competition in an increasingly liberalized environment.

The main contribution of this book is to show how Africa can get its small firms to transform.

ACEG

A Publication of
THE AFRICAN CENTRE
FOR ECONOMIC GROWTH

Funded by
THE UNITED STATES AGENCY
FOR INTERNATIONAL DEVELOPMENT

